United States
Department of
Agriculture

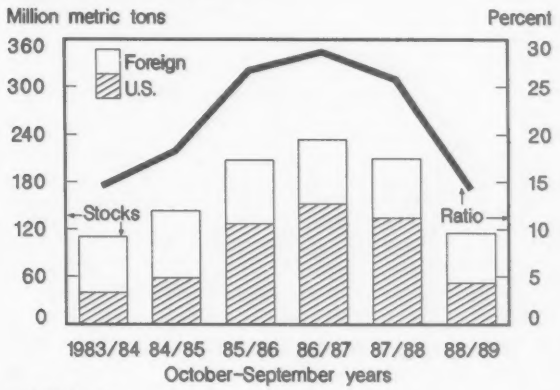
Economic
Research
Service

FdS-308
November 1988

Feed

Situation and Outlook Report

World Coarse Grain Ending Stocks and Stocks-to-Use Ratio



1988/89 forecast.

CONTENTS

	Page
Feed Grain Supply and Use	4
Corn	5
Disaster Relief Provisions	7
Sorghum	8
Barley	9
Oats	10
Hay	11
Feed Demand	12
Byproduct Feeds	13
Food, Seed, and Industrial Use of Corn	13
World Coarse Grain Outlook	15
Soviet Grain Purchase Agreements: A Synopsis	20
Special Article	22
Byproduct Feeds	
List of Tables	43

Situation Coordinator
Larry Van Meir (202) 786-1840

Principal Contributors
Keith Menzie (202) 786-1840
Allen Baker (202) 786-1840
Peter Riley (202) 786-1824 (World)

Electronic Word Processing
Raychall Adams

Commodity Economics Division, Economic Research Service
U.S. Department of Agriculture, Washington, D.C. 20005-4788

Approved by the World Agricultural Outlook Board. Summary released November 16, 1988. The next summary of the *Feed Situation and Outlook* is scheduled for release on February 24, 1989. Summaries and full Situation and Outlook reports, including tables, may be accessed electronically. For details, call (202) 447-5505.

Feed Situation and Outlook is published three times a year and supplemented by a yearbook. Subscriptions are available from the Economic Research Service by calling (301) 953-2515 or writing USDA/ERS, Box 1608, Rockville, MD 20850. Rates: 1 year $10, 2 years $19, 3 years $27. Foreign customers add 25 percent for subscriptions mailed outside the United States. Make check payable to USDA/ERS.

Subscriptions also are available from the U.S. Government Printing Office.

SUMMARY

Drought and extended hot weather in many producing areas will result in a 34-percent drop in 1988/89 feed grain production, from 215.2 million metric tons last year to 141.7 million. About 10 percent fewer acres were harvested, and average yields were down nearly 27 percent. This year's crop is the smallest since the PIK- and drought-reduced crop of 1983. However, beginning stocks of 133.6 million tons assure a supply sufficient to meet market needs.

The feed supply will be augmented with about 37.4 million tons of nongrain concentrates from plant, animal, and fish byproducts, 3 percent less than 1987/88's 38.7 million tons. About 26.1 million tons of the nongrain supply will be high protein concentrates, of which soybean meal will constitute almost 70 percent. High protein concentrates totaled 27.5 million tons last year, about 5 percent more than will likely be available this year.

The tighter supply for all feeds this year will result in significantly increased feed costs. Prices of feed grains, the major source of energy for livestock and poultry, are expected to average from 25 to 45 percent above last year's weighted average price of $76.70 per ton. Soybean meal prices likely will average between $235 and $275 a short ton, compared with $222 in 1987/88.

The corn supply will total a little over 8.9 billion bushels for 1988/89, about 25 percent less than the nearly 12 billion bushels of 1987/88. Disappearance this year is expected to be lower than last year, as corn prices likely will average 25 to 45 percent higher than the $1.94 of 1987/88. Larger exports are expected to partially offset lower domestic use.

The sorghum supply for 1988/89 is forecast at 1,209 million bushels, down about 19 percent from last year. Large September 1 stocks (about 90 percent of 1988/89 estimated use) will moderate the effects of the drought on sorghum markets this year.

The barley supply for 1988/89 forecast at 624 million bushels, a 29-percent decrease from 1987/88. Beginning stocks of 321 million bushels will help offset the drought-damaged 1988 crop. However, higher protein levels brought about by the hot, dry weather are causing tight supplies of malting barley. Since June, the spread between malt and feed barley prices at terminal markets has averaged $1.75, compared with about 45 cents over the past 3 years.

The smallest oats crop on record (211 million bushels), together with low June 1 stocks, has resulted in tight supplies for 1988/89. A forecast 60 million bushels will be imported this year, up 30 percent from 1987/88 and almost double 2 years ago. This would be the largest import level since 1953/54. Oat imports are expected to account for about 16 percent of total supply this year, compared with the previous record of 8 percent last year.

Food, seed, and industrial use of corn is projected at 1,215 million bushels for 1988/89, a 14-million-bushel decline from 1987/88. Modest growth is expected in sweeteners and in starch production, but a small decline is expected in ethanol production because of higher corn prices.

Livestock producers are also encountering short supplies and higher hay prices. The hay supply of 157.5 million tons is 13 percent less than last year's 181.5 million. Beginning stocks of 27.3 million tons were 5.1 million lower, and this year's hay crop of 130.2 million tons was 18.9 million below 1987 production. Area harvested was up 6.1 million acres, but yield was down 21 percent. Alfalfa production was particularly hard hit, accounting for 15 million tons of the decline from last year. Alfalfa hay prices in mid-October were about 35 percent higher than October 1987.

Feed use of the four feed grains is expected to decline 6 percent in 1988/89. Grain-consuming animal units are expected down slightly from the 76.4 million on hand in 1987/88. Dairy cows and heifers, the beef herd, cattle on feed, and the laying flock are all declining, but are almost completely offset by increases in hogs, broilers, and turkeys.

Feed and residual use per GCAU in 1987/88 was 1.9 metric tons, but may decline to about 1.8 this year. Broilers and turkeys will lead an increase of about 1 million high-protein-consuming animal units from the 112.3 million of 1987/88. Roughage-consuming animal units will be down about 1 percent.

World coarse grain production is forecast to decline 10 percent in 1988/89, mainly because of reduced U.S. crops; foreign production is expected to fall just 1 percent. World utilization is forecast to decline only 1 percent, again because of the United States, while foreign use is unchanged.

Although prices are expected to remain above last year, world trade is projected to rise 10 percent in 1988/89, the first significant increase in 4 years. This includes a sizable increase in projected Soviet imports, and also reflects reduced availability of feed-quality wheat on the world market. World ending stocks of coarse grains are projected to drop sharply to their lowest level since 1983/84, while the stocks-to-use ratio will be the lowest since 1973/74.

FEED GRAIN SUPPLY AND USE

With harvests almost completed for this year, the feed grain supply for 1988/89 is coming into clearer focus. Beginning stocks were 133.6 million metric tons, 12 percent less than last year's record 152.1 million but still the second largest on record. Oat stocks, however, were the lowest in 53 years.

Based on NASS's November 1 survey of crops, this year's harvest of the four feed grains is estimated at 141.7 million metric tons, 34 percent less than last year. The area harvested this year was 8.3 million acres less than last year, a 9-percent decline. However, because of this year's severe drought over much of the feed grain growing area, yield per harvested acre was down 27 percent, to 1.8 metric tons per acre, compared with almost 2.5 last year. The drought also was responsible for some of the drop in area harvested. The area planted this year was 5 percent smaller than last year, but drought-related abandonment resulted in a smaller proportion of planted area harvested this year. Barley and oats suffered the greatest damage from the drought and sorghum the least.

The feed grain supply is augmented by a small amount of imports each year, and because of tighter U.S. supplies and higher prices resulting from the drought, imports are expected to be up this year to 1.4 million metric tons compared with last year's 1.1 million. The gain will be mainly in barley and oats, the two crops hit hardest by the drought.

Including imports, the feed grain supply for 1988/89 totals 276.8 million metric tons, 25 percent less than the 1987/88 supply of 368.4 million tons and the lowest supply since 1983/84. Beginning stocks account for 48 percent of the 1988/89 total. It is the large beginning stocks that will enable the market to absorb the shock of one of the worst droughts on record with relatively modest price adjustments and disturbance to the livestock and poultry industries.

Disappearance for the 1988/89 crop year is forecast at 224.2 million tons, down a modest 5 percent (10.6 million tons) from last year's 234.8 million. About 85 percent of the reduction is expected in feed and residual disappearance, with the balance mainly in exports and only a slight drop in food and industrial use. Given these forecasts, ending stocks next year would total 52.6 million tons, 39 percent of the carryover from 1987/88, but substantially larger than the 39.6 million tons on hand at the end of 1983/84, the last year of widespread drought.

The tighter supply situation resulting from this year's drought is raising price expectations considerably. In 1987/88, the average price received by farmers, weighted by disappearance, was $76.70 per metric ton. However, prices received by farmers are forecast to increase from 24 to 44 percent over the 1987/88 average for corn and sorghum and up to 60 to 80 percent for oats. Weighted by disappearance in 1987/88, the farm price likely will range from $97 to $113 per ton this year, about 25 to 45 percent a ton above the weighted average for 1987/88.

A more accurate relationship between supply and use for total feed grains can be obtained by using a June-May year. Supply for the 1987/88 June-May year was 407.6 million tons, comprised of beginning stocks of 191.3 million, production of 215.2 million, and imports of 1.1 million. Disappearance for 1987/88 was 230.2 million tons, up 7 percent (15 million tons) from 1986/87 use of 214.4 million. Exports accounted for 10.7 million of the year-to year gain, feed and residual use 4.2 million, and food, seed, and industrial use (FSI) 900,000 tons of the 15-million-ton increase in disappearance.

Use exceeded production plus imports for the year, so beginning stocks for 1988/89 at 177.4 million tons were down 13.9 million from a year earlier. Adding this year's production of 141.7 million tons and estimated imports to reach 1.4 million gives a total supply for June-May 1988/89 of 320.5 million tons. Disappearance is forecast at 229.3 million tons, a decrease of less than 1 percent from the 1987/88 June-May use of 230.2 million. Feed and residual disappearance is expected to be down 2.7 million tons and exports 1.4 million, but FSI use likely will be up fractionally. Stocks

Feed grains: Supply, disappearance, and ending stocks, June/May, 1980-1987

Year	Supply: Beginning stocks	Supply: Production	Supply: Imports	Supply: Total	Disappearance: Food & indus.	Disappearance: Feed & resid.	Disappearance: Export	Disappearance: Total	Ending stocks: Govt.	Ending stocks: Total
	Million metric tons									
1980/81	107.2	197.9	0.3	305.4	23.0	128.1	73.6	224.7	7.6	80.7
1981/82	80.7	246.2	0.4	327.3	25.2	127.1	61.4	213.7	7.9	113.6
1982/83	113.6	250.2	0.4	364.2	27.2	136.8	53.8	217.8	14.0	146.4
1983/84	146.4	136.4	0.7	283.5	29.7	126.3	56.9	212.9	24.6	70.6
1984/85	70.6	236.9	0.8	308.3	31.7	128.9	58.4	219.0	10.3	89.3
1985/86	89.3	274.4	0.7	364.4	34.8	136.3	40.7	211.8	25.5	152.6
1986/87	152.5	252.3	0.9	405.7	35.4	138.3	40.7	214.4	49.8	191.3
1987/88	191.3	215.2	1.1	407.6	36.3	142.4	51.5	230.2	47.3	177.4
1988/89	177.5	141.7	1.4	320.6		-- 226.1 --				94.5

on June 1, 1989, would be 91.3 million tons, 49 percent below beginning stocks for the current year.

Corn

September 1 corn stocks this year were 4,259.6 million bushels, resulting in total disappearance for the June-August quarter of 1,576.8 million bushels. June-August use was down seasonally from the 1.8 billion bushels in March-May, but was 9 percent above the 1,451 million bushels used in the corresponding quarter last year. FSI use, at 323.5 million bushels, was up 2.6 percent, exports of 414.4 million bushels were up 12.7 percent, and feed and residual disappearance of 838.9 million bushels was up from year-earlier use by 9.2 percent. June-August use brought total disappearance for the 1987/88 crop year to almost 7.7 billion bushels, up 3.8 percent over 1986/87's 7.4 billion.

Generic certificates continued to play an important role in the market availability of corn in June-August. A total of $3.56 billion in generic certificates was exchanged for commodities in the quarter, of which $2.98 billion (83.7 percent) were exchanged for 1,156.9 million bushels of corn -- 73 percent of the total disappearance of 1,576.8 million bushels. Generic certificate exchanges were equal to 63 percent of the disappearance for the March-May quarter but only 30 percent for the corresponding quarter a year earlier.

For total accumulated certificate exchanges of corn from the beginning of the program in April 1986 through May of this year, exchanges for corn in Farmer Owned Reserve (FOR) loans accounted for 1 percent, for corn in Commodity Credit Corporation (CCC) inventory 12 percent, and for corn in 9-month loans 87 percent. However, for the quarter completed in August, exchanges were almost evenly balanced, with 27 percent (316.1 million bushels) from FOR loans, 34 percent (393.4 million bushels) from the CCC inventory, and 39 percent (447.4 million bushels) from 9-month loans.

Corn supply, disappearance, and stocks, Jun-Aug

Item	1986/87	1987/88
	Million bushels	
Supply		
Begin. stocks, June 1	6332.2	5835.5
CCC	1491.5	1304.9
FOR	1483.5	1447.5
Loan	2742.6	2062.6
Uncommitted	614.6	1020.5
Imports (Jun-Aug)	.5	.9
Total Supply	6332.7	5836.4
Use		
Food, seed, & industrial	315.3	323.5
Exports	367.7	414.4
Feed and residual	768.0	838.9
Total	1451.0	1576.8
Stocks Sept 1		
CCC	1443.2	835.0
FOR	1497.7	1126.8
Loan	2102.3	928.6
Uncommitted	-161.5	1369.2
Total	4881.7	4259.6

During June-August the CCC inventory decreased by 89.2 million bushels more than generic exchanges from CCC stocks, and 9-month loans decreased by 678.5 million bushels more than the volume of generic exchanges, which would represent cash redemptions from loans for the quarter. Assuming the corn exchanged for generic certificates was used as part of the disappearance for the quarter, an additional 419.9 million bushels of market supply were needed to account for the total disappearance for the quarter. This corn is assumed to consist of 89.2 million bushels of CCC sales and 330.7 million bushels from cash redemptions of regular 9-month loans. Deducting the 330.7 million bushels from the cash redemptions leaves 347.8 million bushels still on hand. This volume, added to the uncommitted stocks on hand on June 1 plus the 900,000 bushels imported during the quarter, gives uncommitted stocks of 1,369.2 million bushels on hand September 1.

Generic certificates will probably not be as important in the grain markets during the 1988/89 marketing year as they have been the past 2 years. Nearly $1 billion of certificates were outstanding on September 1, and the Department of Agriculture issued about $1.0 billion more during October for the final 1987 corn and sorghum program payments. No decision has been announced about the use of certificates in advanced deficiency payments for the program signup next spring.

The CCC must have collateral in inventory to match the value of certificates outstanding, and CCC inventories are greatly depleted from what they were a year ago. Some certificates will be issued in connection with the Export Enhancement Program (EEP) and Targeted Export Assistance (TEA) sales. However, the volume of generic certificates released in 1988/89 likely will be considerably less than the $12 billion issued during Sept.-Aug. 1987/88. With farm prices substantially higher than loan rates this year, there is no need for the issue of a large volume of generic certificates.

Issue and use of generic certificates

Crop year	Value issued	Value exchanged	Value used for corn	Bushels of corn
	- - Billion dollars- -			Million
1985/86				
April-Aug	1.5	.82	.44	252.6
1986/87				
Sep-Nov	1.2	.69	.43	343.8
Dec-Feb	2.0	1.30	1.04	750.9
Mar-May	3.4	3.28	2.57	1,641.0
June-Aug	1.2	1.22	.93	436.1
1987/88				
Sep-Nov	3.1	2.31	1.68	1,334.1
Dec-Feb	4.8	3.70	2.46	1,261.8
Mar-May	2.7	2.78	2.08	1,141.7
Jun-Aug	1.3	3.56	2.98	1,156.9

Source of corn disappearance by quarter

	Source of Generic exchanges					
	CCC inv.	FOR loans	9-Month loans	Total	Other	Total disappearance
1986/87						
Sep-Nov	23.9	2.9	316.9	343.7	1,605	1,984.7
Dec-Feb	14.0	3.0	734.0	751.0	1,306.6	2,057.6
Mar-May	44.9	7.3	1,588.8	1,641.0	275.5	1,916.5
June-Aug	40.3	4.3	391.4	436.0	1,015.0	1,451.0
1987/88						
Sep-Nov	53.2	14.0	1,266.9	1,334.1	843.8	2,177.9
Dec-Feb	222.4	16.2	1,023.1	1,261.7	872.4	2,134.1
Mar-May	419.6	27.9	694.2	1,141.7	662.1	1,803.8
Jun-Aug	393.4	316.1	447.4	1,156.9	419.9	1,576.8

Tighter Supply, Higher Prices for 1988/89

The most severe drought on record over much of the Corn Belt this year resulted in a 31-percent drop in the average corn yield and some abandonment of planted area, resulting in a crop of almost 4.7 billion bushels, 34 percent below last year's 7.1 billion. However, carryin stocks of 4.3 billion bushels give a total supply of more than 8.9 billion bushels for the 1988/89 crop year. This is 25 percent less than the 1987/88 supply of 12 billion bushels.

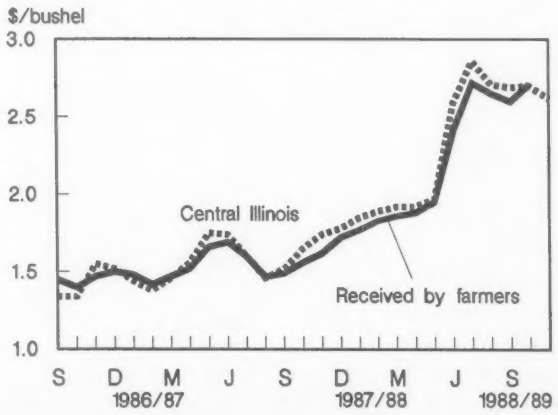
Total use is expected to reach nearly 7.5 billion bushels, 200 million bushels less than 1987/88 disappearance. FSI use is expected to be 1.2 billion bushels, down slightly from year-earlier use, and feed and residual disappearance is forecast at 4.5 billion bushels, down about 200 million from last year. However, exports are strong and will likely reach nearly 1.8 billion bushels, exceeding year-earlier shipments by 40 million.

Disappearance of 7.5 billion bushels would leave ending stocks of 1.45 billion, the smallest since the 1983/84 drought when ending stocks were 1.0 billion bushels. Use is up substantially from 1983/84, but the ending stocks-to-use ratio this year, 19.4 (1.45/7.49), would be significantly higher than 1983/84's ending stocks-to-use ratio of 14.9, (1.0/6.7). The ending stocks-to-use ratio is a measure of the demand to hold stocks and an important factor in the upward pressure on farm prices as measured by the spread between farm prices and the loan rate [see the special article in the August Feed Situation and Outlook Report (FdS-307)]. Based on the historical relationship among farm prices, loan rates, and ending stocks-to-use ratios, the season average farm price is expected be from 25 to 45 percent above the 1987/88 average of $1.94 a bushel.

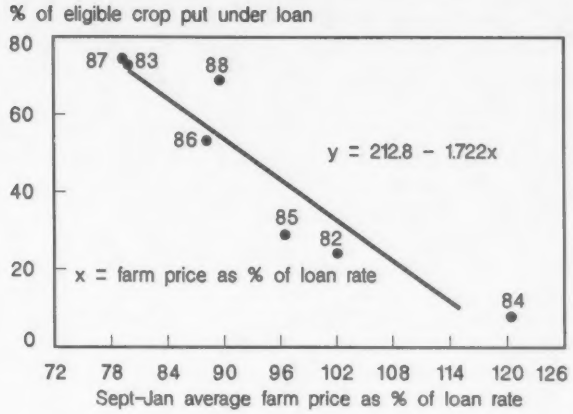
The price of corn shot up sharply during the last half of June as the market began to anticipate a severe drought. The price of corn at Central Illinois elevators peaked on June 27 at $3.23 a bushel. This was also the date on which the FOR was released, thus enabling farmers to redeem corn from the FOR without penalty. The release price for the 1987/88 crop year was $3.03 a bushel, the same as the target price for corn. As the extent of the drought began to become more clearly defined, and the potential size of the supply recognized, the price pressure eased. U.S. farm prices averaged $2.41, $2.72, $2.65, and $2.60 a bushel in June, July, August, and September, respectively.

Based on a seasonal index for corn prices in drought years, prices may reach their seasonal low in November and then increase to a peak next June, depending on weather next spring. In 123 years of crop records, the closest the United States came to having back-to-back widespread droughts was in 1873 and 1874, when the U.S. corn yield was 12 and 15 percent, respectively, below the 1866-1872 average. However, subsoil moisture, particularly in the Eastern Corn Belt, is still well below normal, and favorable weather will be required next spring and summer to bring the corn yield back to trend. If the corn crop looks good by mid-July, prices likely will drop sharply to a seasonal low in October or November. However, if conditions are not favorable,

Monthly Average Corn Prices



Farm Prices, Loan Rate, and Loan Placements



corn prices likely will hold firm, or even climb depending on how far yield falls short of trend.

Uncommitted stocks and outstanding 9-month loans in the beginning stocks total 2.3 billion bushels. This added to this year's corn crop of 4.7 billion gives a total availability of 7.0 billion bushels, about 500 million bushels less than estimated use of almost 7.5 billion bushels. However, during September and October, $520.8 million certificates were exchanged, of which $384.8 million (73.9 percent) were exchanged for corn. If corn exchanges continue to run about 74 percent of total exchanges, the $2.0 billion in generic certificates from carryover on September 1 plus new issues in October will free up about 560 million bushels of corn, primarily from the FOR and CCC inventories.

With market price well above this year's loan rate of $1.77 a bushel, relatively little new crop corn will be put under loan, and what is put under loan will easily be redeemed at this year's prices. Furthermore, more generic certificates may be issued during the year, and some FOR corn may be rotated near the end of the crop year. Thus, release of the FOR may not be necessary to meet market needs. Nevertheless, the 5-day average farm price necessary for release is now $2.93 a bushel compared with the $3.03 needed to release the FOR this past summer. If the FOR is released in 1988/89, farmers will be able to redeem FOR stocks without penalty for the rest of the crop year.

Large Increase in Plantings Likely Next Year

The farm program for 1989 feed grains requires a 10-percent acreage reduction (ARP), does not include an optional paid land diversion (PLD), but, does include the 0-92 alternative. The program also includes an option for farmers to declare their intentions to shift from 10 to 25 percent of their permitted plantings of program crops to soybeans and sunflowers without incurring a penalty against their base in future years.

This year's program included a 20-percent ARP, an optional 10 percent PLD, and the 0-92 alternative. Program participation was 86.9 percent, and the corn base was 83.4 million acres. The diversions to conservation use were 14.6 million acres for ARP, 3.2 million acres for PLD, and 3.0 million acres for the 0-92 option, for a total of 20.8 million acres.

The idled acreage for 1989 might be expected to be at least 10 to 12 million acres less than it was this year. However, the base likely will be somewhat smaller in 1989. Other factors that will affect plantings are program participation, participation in the 0-92 option, the extent to which farmers shift permitted plantings of corn to soybeans, and the amount of acreage outside the base planted to corn. In 1988, about 5 million acres of corn were planted on acreage outside the corn base.

If normal growing conditions prevail during the planting and growing season, the yield likely will be back to trend. Barring a second year of bad weather, next year's crop will be larger and prices for 1989/90 will be lower. The World Agricultural Outlook Board will release its first estimates of supply and demand for 1989/90 next May.

Disaster Relief Provisions

On August 11, President Reagan signed the Disaster Assistance Act of 1988 (P.L. 100-387), and all provisions of the act became effective August 26, 1988. This law provides for financial assistance to farmers for crop losses resulting from this year's drought or other natural disasters, and establishes a new program to replace the existing Emergency Feed Program and Emergency Feed Assistance Program. The law provides for assistance to both program and nonprogram crop producers. Feed grain crops are considered program crops, so only program crop provisions will be covered here.

Crop Assistance Provisions

Crop loss is measured from program yield. The base payment rate is the target price for participants and the county loan rate for nonparticipants.

The disaster benefit for participants whose actual yield was up to 36 percent less than their program yield would be the advanced deficiency payment on the loss (not applicable to nonparticipants). For yield losses greater than 35 but less than 76 percent, participants would be able to keep the advanced deficiency payment on the first 35 percent of loss, would receive 65 percent of the target price per bushel of

loss in excess of 35 percent, and would have to repay the advanced deficiency payment on the excess loss. Those not in the program would receive 65 percent of the county loan rate.

For crop losses of 76 percent or greater, participants would not have to repay the advanced deficiency payment on the first 35 percent of loss, would receive 65 percent of the target price for 40 percent of their crop loss, would receive 90 percent of target price on the loss above 75 percent, and would have to repay the advanced deficiency payment on the loss exceeding 35 percent. Nonparticipants would receive 65 percent of the county loan rate on 40 percent of their loss, and would receive 90 percent of the county loan rate for the crop loss above 75 percent.

A complete loss would be declared for producers whose yield was less than 7, 5, and 4 bushels per acre for corn, sorghum, and barley and oats, respectively. In this case, participants would not have to repay the advanced deficiency payment on the first 35 percent of loss, would receive 65 percent of target price on 40 percent of the loss and 90 percent of target price on 25 percent of the loss, and would have to repay the advanced deficiency payment on 65 percent of the program yield. Nonparticipants would be eligible for 65 percent of the county loan rate on 40 percent of their base yield and 90 percent of the county loan rate on 25 percent of the base yield.

Payment reductions for nonprogram farms will be levied at the rate of 20 percent for corn, barley, and sorghum, and 5 percent for oats. For participating farms, the total disaster payment will be reduced by the amount of Federal Crop Insurance Corporation crop insurance indemnity payment received.

The payment limit will be $100,000 per farm regardless of the calendar year in which payment is issued, and applies to the sum of crop disaster and emergency livestock feed assistance payments. Moreover, a producer with a qualifying gross income exceeding $2 million will be ineligible for any disaster relief.

March 31, 1989, is the application deadline for 1988 crops.

Applications are being made through the local county Agricultural Stabilization and Conservation Service (ASCS) office.

Livestock Assistance Provisions

To be eligible for livestock assistance, operations must be in counties where the Secretary of Agriculture has determined that livestock emergencies exist, producers must have gross revenues of less than $2.5 million, and must produce their own feed and have a 40-percent loss in feed production.

Livestock eligible for assistance include cattle, sheep, goats, swine, poultry, horses and mules used for food or food production, fish for food, and other animals designated by the U.S. Department of Agriculture as part of a foundation herd or offspring, or that are purchased as a part of normal operations.

Producers are eligible for 10 pounds of feed per day per animal unit, less the feed on hand at the time of application. Feed assistance can be claimed for the normal length of the livestock program or until producers have their own feed production, whichever comes first. Coefficients for computing animal units are: dairy cows and 2-year old bulls, 2.0; cattle, beefalo, buffalo, horses and mules 1 year old or older, 1.0, 6 months to 1 year old, .5, and if less than 6 months old, .33; swine 1 year old and over, .5, from 6 months to 1 year, .33, and less than 6 months, .20; lambs or kids, .14; turkeys, geese, chickens, and ducks weighing over 8 pounds, .05, and if less than 8 pounds, .02.

The Emergency Feed Program (EFP) provides for reimbursement of 50 percent of the cost of feed purchased, up to 5 cents per pound, for the amount of feed eligible under P.L. 100-387.

The Emergency Feed Assistance Program (EFAP) authorizes an eligible livestock producer to buy feed grains from the CCC inventory at 75 percent of the county loan rate.

The maximum assistance a producer can receive under these programs is $50,000 per calendar year, and a total of $100,000 for all assistance programs. However, he cannot draw both crop and livestock assistance for the same crop loss. If a producer uses the EFAP, the difference between the county loan rate and the county posted price is used to determine the value per bushel of assistance.

Application for the emergency livestock assistance is made through the local county ASCS office. Applications will be accepted through March 31, 1989.

Sorghum

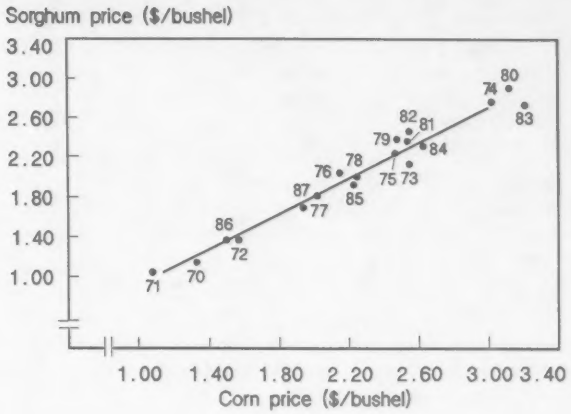
Sorghum production for 1988 was projected at 546 million bushels, 26 percent below the 1987 crop. Yields of 60.6 bushels per acre are 13 percent below last year's record of 69.9 bushels, but well above the drought-reduced 48.7 bushels of 1983.

As of November 13, the sorghum harvest for the 11 States which accounted for 96 percent of the 1987 crop, was 96 percent complete, 7 percentage points ahead of the 1987 crop on that date, and 9 points ahead of average. The harvest in Kansas, the largest producing State in 1987, with 37 percent of the crop, was 97 percent complete compared with an average of 85 percent. The Kansas crop is projected at 195 million bushels compared with 274 million in 1987.

Sorghum supply, disappearance, and stocks, June-August

Item	1986/87	1987/88
	Million bushels	
Supply		
Beginning stocks June. 1		
CCC	400.4	511.4
FOR	94.0	80.4
Loan	309.8	148.0
Total	835.0	814.5
Production	0.0	0.0
Total supply	835.0	814.5
Use		
Food, seed, and industrial	2.6	3.2
Exports	43.5	46.0
Feed and residual	45.6	95.9
Total Use	91.7	145.1
Ending Stocks Sept. 1		
CCC	408.9	463.6
FOR	92.9	69.5
Loan	279.9	51.8
Free	-38.4	77.8
Total	743.3	662.7

Relationship of Corn and Sorghum Prices



The total supply for 1988/89 is projected at 1,209 million bushels, down 19 percent from last year. Beginning stocks of 663 million bushels, which amounted to about 90 percent of forecast use in 1988/89, will help reduce the impact of the drought. Stocks by position on September 1, 1988, were as follows: CCC inventory, 464 million bushels; FOR, 70 million bushels; and free stocks, 129 million bushels, of which 50 million were outstanding under loan.

By October 26, 7 million bushels of the 1988 crop had been placed under loan, and 67.1 million remained in FOR and in the Special Producer Storage Loan program. This year an estimated 8.3 million acres are being harvested in compliance with the feed grain program. With an average national yield of 60.6 bushels per acre, about 500 million bushels would be eligible for loans. Relatively high prices likely will keep loan placements small compared with last year. Through October 28 last year, 104 million bushels of 1987-crop sorghum had been placed under loan.

Sorghum disappearance for 1987/88 totaled 822 million bushels compared with 746 million the previous year. FSI use was 14 million bushels, down 1 million from a year earlier. Feed and residual use was 576 million bushels in 1987/88, up 43 million from 1986/87. Sorghum exports accounted for 231 million bushels, an increase of 33 million from year-earlier levels.

Sorghum prices received by farmers averaged $1.70 per bushel for 1987/88, a 24-percent increase over 1986/87. Prices were higher for each month in 1987/88 compared with the same months in 1986/87, and a widening spread appeared as the 1988 drought began to affect prices. By August 1988, the farm price was $2.46 per bushel, $1.05 higher than August 1987.

The increase in the farm price for corn for the 1987/88 crop year was 29 percent, slightly greater than for sorghum. The average price received for corn was $1.94 per bushel for 1987/88. Based on the historical relationship of corn and sorghum prices illustrated in the figure, and on the traditional feeding value relationship between the two grains, a sorghum price of $1.75-$1.85 would be expected. With the somewhat lower season-average price of $1.70, sorghum feeding probably increased relative to corn in some regions. By September 1988, the sorghum price was 91 percent of corn.

Sorghum use is expected to decline about 7 percent to 765 million bushels in 1988/89. Feed and residual use is forecast to decline almost 5 percent from the 1987/88 estimate to 550 million bushels. Exports are projected at 200 million bushels, a decrease of 31 million from 1987/88. FSI use is expected to be up only slightly at 15 million bushels. Ending stocks are forecast to decline by a third to 444 million bushels, which would result in an ending stocks-to-use ratio of 58 percent, a 23-percentage-point decline from the year-earlier level. The 1988/89 farm price is expected to average between $2.15 and $2.55.

Barley

The 1988 barley crop is estimated at 283 million bushels, down 47 percent from 1987 and the smallest since 1953. The drought reduced the national average yield to an estimated 38.2 bushels per acre, compared with 52.7 in 1987 and a 5-year average of 52.0 bushels. Harvested acreage was also affected by the drought. Over the last 5 years, barley acreage harvested for grain has averaged about 92 percent of planted acres, but in 1988 only 76 percent of planted acres were harvested.

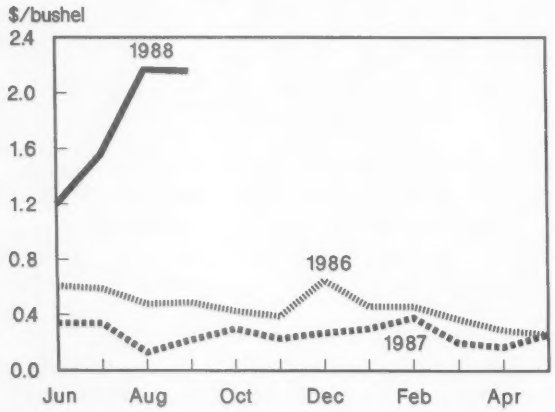
Production in the top five producing States (North Dakota, Montana, Idaho, Minnesota, and Washington) in 1988 totaled 178 million bushels compared with 380 million estimated for 1987, a 53-percent decline. North Dakota alone suffered a 97-million-bushel decline, with a yield of 21 bushels per acre, down 27 from 1987.

On June 1, 1988, stocks were 321 million bushels, a decline of 15 million from the year-earlier level. CCC-owned inventory was 50 million bushels, the FOR and Special Producer Storage had 109 million, and free stocks were 162 million bushels with 89 million outstanding under loan. Imports for 1988/89 are forecast at 20 million bushels, up from 14 million last year. Much of the increase is probably due to tight domestic malt barley supplies. Total supply for 1988/89 is forecast at 624 million bushels, down 29 percent from 1987/88.

Barley use for 1988/89 is projected at 465 million bushels, a decline of 17 percent from 1987/88. Domestic consumption is expected to decline 17 million bushels from 1987/88 to 415 million. FSI use is projected to remain near 175 million bushels this year, almost unchanged from 1987/88. Feed and residual use is expected to decline 18 million bushels to 240 million. Feed barley supplies likely will reflect the effect of the 1988 drought on malt barley quality. Higher protein levels resulting from hot, dry conditions may cause a significant amount of barley produced for malt to be used for feed. The spread between malt and feed barley prices reflects the relative supply situation. The average spread for malt and feed barley in Minneapolis and Duluth markets has been about 45 cents for the past 3 years. Since June, the spread has averaged about $1.75.

Exports in 1988/89 are forecast to decrease substantially from year-earlier levels because of an anticipated reduction in EEP shipments. Overseas markets are expected to decline sharply from 126 million bushels last year and 137 million in 1986/87. Exports for the 1988/89 marketing year through November 3 totaled 29.6 million bushels, compared with 49.6 million in 1987/88. Outstanding sales stood at 11.2 million bushels, compared with 17.8 million a year ago.

Malt vs. Feed Barley Market Price Spread



Ending stocks for 1988/89 are projected to decline to 159 million bushels, about half of year-earlier levels. This would be about 34 percent of forecast 1988/89 use, down from 58 percent a year ago. Beginning September 1988, the National Agricultural Statistics Service reinstated quarterly stocks reports for barley. On September 1, 1988, total stocks were 441 million bushels. CCC inventory was 35.9 million bushels, down from 50.1 million at the beginning of the crop year. The FOR stood at 72.8 million at the end of the first quarter, down from 109.5 million on June 1. Barley outstanding under loan totaled 24.7 million bushels on September 1, compared with 88.5 million at the beginning of the 1988/89 crop year. Free stocks on September 1 were 307.6 million bushels. Through November 1, CCC inventory showed no change, FOR decreased about 7 million, and barley under loan increased about half a million bushels. Through the end of September, 14.6 million bushels of 1988-crop barley had been placed under loan.

The average price received for all barley is projected between $2.50 and $2.90 for the 1988/89 crop year. The simple average price received by farmers through September was $2.82 per bushel. Farm-level malt barley prices averaged $3.22, and feed barley prices averaged $2.29 for the same period. Malt barley prices at Minneapolis are much higher than a year ago owing to the effects of the drought on supplies. Through September, the simple-average price at Minneapolis was $4.03, compared with $1.93 a year ago.

Oats

The 1988 oats crop is estimated at 211 million bushels, 44 percent below 1987 and the smallest since record keeping began in 1866. Yields for the 1988 crop are estimated at 39.1 bushels per acre, the lowest since 1959. The average yield for the last 10 years is 55.6 bushels per acre. In addition to the reduced yields, harvested acreage fell to an estimated 5.4 million acres from 6.9 million in 1987. Oats acreage harvested for grain has declined steadily since the mid-1950's, when it averaged above 35 million. With the exception of 1982, harvested U.S. acreage has remained below 10 million.

Imports are an increasingly important component of oats supply. A forecast 60 million bushels will be imported in 1988/89, up 30 percent from last year and almost double the 33 million imported in 1986/87. This would be the most since 1953/54, when imports were 79.4 million bushels. However, imports would account for almost 16 percent of total supply for 1988/89, compared with about 5 percent in 1953/54. Year-to-date imports were 12.6 million bushels

through August, compared with 6.5 million for the first 3 months of 1987/88.

Beginning stocks for the 1988/89 crop year amounted to 112 million bushels. CCC-owned inventory was 3.5 million bushels on June 1, FOR and Special Producer Storage Loans were 2.2 million, and 1.6 million bushels were outstanding under loan, leaving 104.7 million bushels of free stocks. Total oats supply for 1988/89 is estimated at 383 million bushels, down 31 percent from last year.

As of November 1, there were 3.1 million bushels of oats in CCC inventory, 0.9 million in the FOR and under Special Producer Storage Loan, and 0.9 million outstanding under loan. Only 700,000 bushels of the 1988 crop had been put under loan, and 100,000 bushels had been redeemed.

Total disappearance is forecast to decline 32 percent to 302 million bushels for 1988/89 compared with 1987/88. FSI is expected to increase to 86 million bushels, almost 9 percent above last year. Some of the anticipated increase is likely to be due to greater food consumption of various oat products, including oat bran, because of recent studies showing the health benefits of oats.

Feed and residual use of oats is expected to decrease significantly in response to tightening supplies and higher prices. This use for 1988/89 is projected at 215 million bushels, compared with 361 million for 1987/88 and 395 million in 1986/87. Feeding of oats will be mostly limited to race and pleasure horses until prices are more in line with the feeding value of oats relative to corn.

Ending stocks for 1988/89 are expected to tighten further from last year. Projected ending stocks are 81 million bushels, compared with 112 million at the end of 1987/88. This gives a stocks-to-use ratio of 0.27, indicating a very tight market for oats.

Higher prices for oats reflect this year's drought and reduced harvested acreage. The average price received by farmers is projected to be between $2.50 and $2.85 for the 1988/89 crop year. The preliminary price received in October (mid-month price) was $2.44, and the simple average for the first 5 months of 1988/89 is $2.62. The estimated price range this marketing year is slightly higher than the $2.40-$2.80 range for corn. High prices will likely continue to attract imports to meet domestic demand, but increased domestic production will depend on oats' profitability relative to other crops.

Hay

The hay supply for 1988/89 is 157.5 million tons, down 13 percent from last year's 181.5 million tons, and the smallest since 1977/78. Drought in the Corn Belt, Lake States, and Northern Plains reduced hay yields substantially. The alfalfa crop was especially hard hit.

Hay production totaled 130.2 million tons this year, 13 percent below last year's 149.1 million tons and the smallest since 1976. Hay was harvested from 66.8 million acres this year, 6.1 million more than last year, but the yield per acre of 1.95 tons was down 21 percent from the year-earlier yield of 2.46 tons.

Production of alfalfa, an important forage crop for the dairy industry, totaled 69.6 million tons, a decline of 15 million from 1987's 84.6 million, even though 26 million acres were harvested this year compared with 25.5 million last year. The U.S. alfalfa yield this year was slightly under 2.7 tons per acre, 19 percent below last year's yield of a little over 3.3 tons per acre.

The 10 major dairy States (California, Iowa, Michigan, Minnesota, New York, Ohio, Pennsylvania, Texas, Washington, and Wisconsin), accounting for about 67 percent of U.S. milk production,harvested 35.2 million tons of alfalfa from 13.1 million acres. Last year these States harvested 41.2 million tons from 11.4 million acres. Thus, production was down 15 percent because of a 25-percent drop in yield even though the area harvested was up 15 percent. For Iowa, Texas, and Washington, the increase in area was sufficient to offset the decline in yield, and harvest exceeded year-earlier production.

Production of all other types of hay totaled 60.6 million tons from 40.8 million harvested acres. In 1987, the comparable harvest was 64.6 million tons from 35.3 million acres. Thus, this year's yield of almost 1.5 tons per acre was 19 percent below the 1987 yield of a little over 1.8 tons per acre. Part of the increase in area this year was due to the drought provision that permitted counties declared disaster areas to harvest hay from conservation use acres. The 10 major dairy States harvested 10.2 million acres of other types of hay this year for a production of 19.9 million tons, down from 21.3 million tons harvested from 9.5 million acres a year ago.

Combined production of alfalfa and other types of hay in the 10 major dairy States amounted to 55.1 million tons this year compared with 62.5 million last year. For both years the leading dairy States accounted for 42 percent of total hay production.

Beginning stocks of hay this past May 1 totaled 27.3 million tons, 5.1 million less than year-earlier carryover of 32.4 million tons. Beginning stocks in the leading dairy States were 10.2 million tons, 37 percent of the total, and in 1987 beginning stocks were 11.6 million, 36 percent of the total.

Production of silage may also be down this year adding to the shortage of forage. In 1987, 85.6 million tons of corn silage were harvested from 5.9 million acres. The leading dairy States accounted for 48.3 million tons (56 percent) of total production. The yield of corn for grain this year was 31 percent below last year's yield, and the silage yield will probably be down a similar amount. However, area harvested for silage this year probably will increase. The area of corn harvested for grain this year was 84 percent of the planted area, compared with 90 percent in 1987. Thus, some of the area abandoned for harvest as grain this year likely was harvested for silage.

Prices for both alfalfa and other types of hay will average substantially higher for 1988/89 (May-April) than for the 1987/88 crop year. This past May, the average price of alfalfa hay received by farmers was $85.90 a ton, 11 percent above the year-earlier price of $77.70. By October, the price had risen to $91.80 a ton, 35 percent above the October 1987 average of 68. The season-average price for 1987/88 was $69.31. Similarly, the price received by farmers for all other hay was $55.10 a ton in May, 8 percent above the May 1987 price of $51 a ton. In October, all other types of hay averaged $70.10 a ton, 32 percent above the year-earlier price. The 1987/88 average price received by farmers for all other hay was $52.09 a ton.

The number of roughage-consuming animal units (RCAUs) on hand for 1988/89 is estimated to total 76.4 million, down less than 1 percent from the 76.9 million in 1987/88. Thus, the hay supply this year is slightly over 2 tons per RCAU compared with 1987/88's supply of slightly over 2.3 tons and a disappearance of 2 tons.

Pasture and range conditions were rated 59 percent on November 1, compared with 71 percent a year ago and a 1977-86 average of 76 percent. Thus, hay feeding likely started earlier this year than last year. Weather conditions next spring will have an important bearing on the extent to which hay prices rise this year. An early spring would enable ranges and pastures to provide grazing early and cut down on hay needed. However, if spring is late and/or growing conditions poor, feeding hay will extend further into the spring with more upward pressure on prices and greater depletion of old crop hay stocks.

FEED DEMAND

Feed and residual use of the four main feed grains--corn, sorghum, barley, and oats--totaled 145.6 million metric tons in 1987/88 and is expected to slip to 136.6 million in 1988/89. Higher prices for the drought-reduced crops will likely cause most of the decline. Estimated GCAUs in 1987/88 totaled 76 million, and are expected to be nearly the same in 1988/89.

The dairy sector has been keeping concentrate feeding relatively high to increase production per cow. On October 1, grain and other concentrates fed were 0.2 pound more than last year, the same increase as on April 1. On July 1, concentrates fed were the same as in 1987.

The string of support price cuts in recent years has resulted in lower prices and returns. Returns to milk producers will likely remain relatively low, encouraging a reduction in concentrate feeding and a further weakening of cow numbers. Higher prices for alfalfa hay may be helping to keep concentrate feed use strong, because prices are up 37 percent from last year in the major dairy-producing States. The average number of milk cows during July-September was 1 percent below last year. A further decline in cow numbers is expected during 1988/89, and fewer replacement heifers are expected.

Even with a slight increase in 1988's calf crop, the large number of cattle placed in 1987/88 is expected to reduce the number of feedlot cattle available in 1988/89. Therefore, cattle on feed in 1988/89 will likely decline. Grain use for cattle feeding in 1988/89 is expected to be down. Higher priced feed would traditionally suggest less time on full feed and lower marketing weights.

Feed use by the hog sector may increase in 1988/89 because of larger numbers of hogs. Returns to hog producers were negative in September, the result of high feed prices and relatively low hog prices. During October-December 1988, returns are expected to remain negative. Even so, farrowing intentions on September 1 remained above a year ago, with the 10 quarterly-reporting States up 4 percent for September-November 1988 and 2 percent for December 1988-February 1989. The negative returns are having an impact, because in June farrowing intentions for September-November 1988 indicated a 6 percent rise over a year earlier. Some producers may be able to take advantage of the drought assistance programs to lower their feed costs from prevailing market prices. This may help improve their returns and allow them to remain in production.

Many poultry operations buy their feed on the open market and therefore would not qualify for drought assistance. Some independent egg producers might qualify, but few broiler or turkey operations grow their own feed. Even so, prices for broilers and turkeys have strengthened, allowing producers to realize positive returns. As a result of strong demand, broiler and turkey producers are expected to expand production in 1988/89. During October 1988-September 1989, broiler production may increase 4 percent from a year earlier, and turkey production is forecast to be up 1 percent. Turkey producers suffered negative returns in early 1988, but stronger prices since July turned profits around.

Prices of selected protein sources

Commodity	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
				1988				
				Cents per pound of protein				
Soybean meal, Decatur	.22	.23	.25	.33	.29	.29	.30	.29
Cottonseed meal, Memphis	.17	.17	.18	.28	.27	.22	.25	
Meat & bone meal, Kansas City	.24	.24	.26	.36	.27	.26	.28	
Fishmeal, East Coast	.33	.33	.35	.43	.44	.41	.41	
Gluten feed, Ill. pts.	.28	.28	.28	.31	.32	.29	.28	
Gluten meal, Ill. pts.	.24	.23	.23	.30	.32	.26	.26	
Brewers' dried grains, Milwaukee	.15	.16	.17	.20	.26	.24	.25	
Distillers' dried grns, Lawrenceburg, Ky.	.25	.24	.24	.24	.29	.29	.26	
Wheat middlings, Kansas City	.16	.16	.13	.24	.24	.20	.25	

Layer numbers in 1988/89 will likely remain below 1987/88. Reduced demand for eggs resulted in low prices and negative returns even before feed prices increased. The industry has been trying to reduce supplies during 1988 to strengthen prices. With more of the baby boom generation worrying about health and eating habits, egg consumption may continue to slip in 1988/89. This decline could force further cuts in layer numbers in 1988/89 and thus cut feed demand from the egg sector.

Byproduct Feeds

The drought has boosted prices for the various protein supplements by reducing supplies of soybeans, flax, and sunflowers. Soybean meal output in 1987/88 comprised 71 percent of high-protein feed produced, and is expected to represent 70 percent in 1988/89. Tankage and meat meal was the second most important protein source, making up 9 percent of total supply. Since soybean meal is the biggest protein source, changes in soybean meal prices tend to influence the prices of all protein sources. Soybean meal prices jumped sharply in June 1988 to $288 per ton from $224 in May, and were up 54 percent in June from a year earlier when prices were $187 per ton. Similar changes occurred in the price per pound of protein in soybean meal, cottonseed meal, and meat and bone meal. Gluten feed and meal prices in Illinois rose sharply in June and peaked in July. On a per-pound-of-protein basis, gluten feed increased 41 percent in June from last year and 46 percent in July; similar changes occurred in gluten meal.

Feeders should evaluate different protein sources for their animals' needs because prices may not reflect nutritive value, particularly in different locations. Thus, by changing formulation, feeders may be able to lower costs without affecting performance, but care must be taken to ensure essential nutrients are maintained. On a crude basis, protein sources in September 1988 varied from 41 cents per pound for fishmeal to 25 cents for cottonseed, brewers' dried grains, and wheat middlings.

Soybean meal use in 1988/89 is expected to total 18 million metric tons, down 6 percent from 1987/88. Smaller supplies of soybeans have boosted prices for beans and their products. In 1987/88, the average price of meal was $221.90 per ton at Decatur, up from $162.70 in 1986/87. In 1988/89, prices may average $235 to $275 per ton, up $13 to $53 per ton.

In 1988/89, oilseed meal use, including soybean meal, is expected to be down 4 percent from 1987/88. While soybean, linseed, and sunflower meal will likely be down, cottonseed, peanut, and rapeseed meal use may increase. Tankage and meat meal use will likely be down, as cattle slaughter is off from last year. Gluten feed and meal is expected to be about the same as last year, while brewers' and distillers' dried grains may be off slightly from last year.

FOOD, SEED, AND INDUSTRIAL USE OF CORN

During the last 10 years, FSI use of corn has been an increasingly important market, accounting for at least 15 percent of total disappearance since 1984. In 1975-80, only 5-10 percent of corn was used for food or industrial purposes. Rapid growth in production and use of high fructose corn syrup (HFCS) and ethanol as a substitute for petroleum accounted for much of the increase. Between 1977 and 1987, corn used to produce HFCS increased from 80 million to almost 360 million bushels, and corn used to produce all forms of alcohol increased from 30 million to about 335 million bushels. However, the maturing HFCS market and weak petroleum prices have contributed to slower FSI growth during the past 2 years.

FSI corn use for 1987/88 totaled 1,229 million bushels, a 3.2-percent increase over 1986/87. Corn used in wet-milled products increased 3.9 percent, while dry-milled alcohol, dry-milled and alkaline-cooked products, and seed use remained almost unchanged from year-earlier levels. HFCS accounted for most of the growth for wet-milled products, with a 5.9-

Corn: Food, seed, and industrial use 1/

Year beginning September 1	HFCS	Wet-milled products: Glucose and dextrose	Wet-milled products: Starch	Wet-milled products: Alcohol	Dry-milled alcohol	Dry-milled and alkaline cooked products	Seed	Total
				Million bushels				
1975	45	162	116	5	20	154	20	522
1976	62	164	116	10	15	155	20	542
1977	80	170	124	10	20	158	20	582
1978	105	170	124	15	20	155	20	609
1979	127	170	120	25	20	158	20	640
1980	165	183	120	35	35	160	20	718
1981	185	183	130	83	35	162	19	797
1982	215	188	127	130	50	170	15	895
1983	256	189	147	150	50	164	19	975
1984	310	187	143	170	100	160	21	1,091
1985	328	188	152	185	127	161	19	1,160
1986	339	185	155	200	135	161	16	1,191
1987	359	187	167	200	136	163	17	1,229
1988 2/	370	190	171	190	110	165	19	1,215

1/ Data are estimates based on production and sales figures from Government and private industry.
2/ Projected.

percent increase over 1986/87. Glucose and dextrose production used 187 million bushels of corn in 1987/88, a 1-percent increase from 1986/87. There has been very little growth in glucose and dextrose production since 1980. Corn used in wet-milled alcohol production remained at 200 million bushels in 1987/88, unchanged from 1986/87, while dry-milled alcohol production used 136 million bushels, up 1 million from the previous year. Seed use was up 1 million bushels to 17 million.

In fourth-quarter (June-August) marketing year 1987/88, FSI use was 323 million bushels, 2.5 percent ahead of the year-earlier level. During the quarter, HFCS producers used 6.6 percent more corn than in fourth-quarter 1986/87. Seasonal demand for carbonated beverages accounted for increased HFCS production during the summer months, and the drought added to the growth over last year.

Although total HFCS production increased during the summer quarter, production of HFCS-55, typically used as a sweetener for soft drinks, was down about 1 percent. Tight supplies and higher prices for HFCS-55 resulted in some bottlers switching to HFCS-42, which is less sweet and typically used to sweeten dairy products and baked goods. Fourth-quarter HFCS-42 production increased 18 percent over 1986/87, which partly reflects the shift in the bottling industry.

HFCS prices have dropped from seasonal highs in August. HFCS-42 prices averaged 12.1 cents per pound at Midwest points at the end of October, down from 15.3 cents per pound at the end of August. Similar patterns held for HFCS-55, with prices declining 3.9 cents per pound to 14.6 cents for the same period. August 1988 prices for all HFCS products were more than 20 percent higher than August 1987, reflecting the effect of the drought on net corn prices paid by corn refiners.

Corn used in glucose and dextrose production increased about 2 percent to 49.9 million bushels for the June-August quarter over the last quarter of 1986/87. Glucose prices have increased sharply in recent months because of increased net corn costs. Prices have been about 35 percent higher at Midwest points in recent months compared with the first 6 months of 1988. Dextrose prices are more closely related to sugar prices, and therefore have not increased in response to higher corn prices.

Starch production for 1987/88 used 167 million bushels of corn, up almost 7 percent from 1986/87. Fourth-quarter use of 43 million bushels was 3.5 million higher than the previous year. Starch prices at Midwest points for the June-August quarter of 1988 averaged 12.73 cents per pound, about 25 percent higher than year-earlier prices. The season-average price was 11.2 cents per pound, compared with 9.5 cents for 1986/87.

Beverage and fuel alcohol production during June-August 1987/88 used about 85 million bushels of corn, about 75 million of which was used to produce ethanol for fuel. Ethanol sales and corn use were unchanged from both March-May 1988 and the last quarter of 1986/87. High corn prices, reduced industry capacity due to some plant closings, and relatively low petroleum prices have contributed to the slow growth in ethanol sales.

The outlook for 1988/89 FSI use of corn is for modest growth in wet-milled corn processing for sweeteners and starch, and decreased use in ethanol production. Dry-milled and alkaline-cooked products will increase slightly, while dry-milled alcohol production will decrease, reflecting conditions in the ethanol market. Higher corn prices brought about by the small 1988 crop will affect FSI use somewhat. However, processing costs are a large part of the price for many products, so effects may be limited. Seed use likely

will increase next spring, reflecting the effects of the 10 percent Acreage Reduction Program announcement regarding corn acreage. Total FSI use of corn for 1988/89 is forecast at 1,215 million bushels, a 1-percent drop from 1987/88.

HFCS production should show moderate growth in 1988/89. Corn use for this category is projected to increase 3 percent to 370 million bushels. The effect of higher corn prices on production costs will be partially offset by strong soft drink sales boosted by competitive pricing among bottlers.

The largest change in 1988/89 use likely will be in ethanol production. Corn used for wet-milled alcohol production likely will decrease 10 million bushels from 1986/87. Dry-milled alcohol production is projected to use 20-25 million bushels less corn than last year.

The forecast reduction accounts for higher corn prices brought about by the drought, weak petroleum prices, and reduced or eliminated State tax exemptions which had been in place for most of the last 10 years for ethanol producers. These tax benefits have averaged from 30 to 40 cents per gallon of ethanol. Alabama, Tennessee, Ohio, and Kentucky eliminated exemptions in the last 6 months. In addition to fuel alcohol production declines, a 5-million-bushel decline is forecast for corn use in distilled spirits.

WORLD COARSE GRAIN OUTLOOK

The major event shaping the 1988/89 coarse grain outlook is the U.S. drought. Sharply reduced crops in the United States are the main reason for a large drop in world production and projected stocks, along with a substantial increase in prices. Overall foreign output of coarse grains--despite large drops in Soviet and Canadian production--is expected to show only a slight decline from 1987/88, while foreign consumption remains virtually unchanged.

Although prices are up from last year and are expected to remain higher, world trade is projected to increase by 10 percent in 1988/89.[1] This would be the first significant year-to-year increase since 1984/85. Some of this gain can be attributed to the reduced availability of wheat, including feed-quality wheat, on the world market. U.S. coarse grain exports are forecast to fall 1 million tons to 51.5, as declines in barley and sorghum more than offset an increase in corn exports. The U.S. share of the world coarse grain market is projected at 58 percent, compared to 65 percent in 1987/88.

[1/] All trade years referred to in this section are October-September and exclude intra-EC trade unless otherwise specified.

World Production Falls to 5-Year Low

Global output of coarse grains for 1988/89 is forecast at 710 million tons, down 10 percent from the year before. Total harvested area of 323 million hectares is expected to be about the same as 1987/88, but average yields are forecast down 10 percent to 2.2 tons/hectare. Most of the production decline is forecast in corn, with smaller decreases in barley, oats, and rye. Sorghum should be unchanged.

If the United States is excluded, the picture is much more stable. Foreign production is forecast at 568 million tons, just 1 percent below last year. This outturn would be the fourth highest on record. As a group, the major foreign exporters are expected to register little change in total production, with only Canada and China declining. Argentina, Australia, the EC, South Africa, and Thailand are all forecast to have higher coarse grain production. Declines are forecast in Soviet and Eastern European output, but a sharp increase is expected for India.

As in the United States, Canada's production was also reduced by drought, falling an estimated 25 percent. This consists mainly of a 4-million-ton drop in barley and a 2-million-ton drop in corn. The quality of the barley crop is reported to be good, as drought tended to raise protein content of the grain. Oats production, at 2.9 million tons, is nearly unchanged.

China's corn crop is forecast at 75 million tons, down 6 percent from the 1987/88 record, resulting from both lower area and yields. The reduction in area reflects the intense competition for land in China, where grains compete with cash crops and nonfarm uses. Wheat was the only grain with forecast larger area in 1988/89.

An 8-percent rise in EC production is forecast for 1988/89, led by a 5.1-million-ton increase in barley. EC corn production is expected to be up 1.3 million tons. The outturn for Other Western Europe is forecast to decline 4 percent from 1987/88. This is below earlier projections because a dry spring and heavy late-summer rains held back expected improvements in Scandinavia's barley and oats.

Coarse grain production in the USSR is forecast at 98 million tons, down nearly 16 million tons from last year's bumper harvest. Barley is expected to fall 13 million tons, oats 2 million, and rye 1.5 million. On the other hand, an excellent corn crop is likely, and forecast production of corn for grain is 16.5 million tons. This would be up almost 2 million tons from last year and the highest in 27 years.

In South Asia, growing conditions during 1988 have been generally favorable for coarse grains, enabling India's production to recover from last year's drought. Output is forecast up nearly 7 million tons, or 30 percent. Flooding in Bangladesh and in the Punjab region of India and Pakistan

had little bearing on coarse grains, since little is grown in these areas.

Thailand's recovery from poor 1987/88 crops is also striking. Although the forecast for the corn crop has been lowered slightly from earlier projections to 5 million tons, mainly due to scattered late-season weather problems, the harvest will still be the second highest on record.

No Major Rebound Forecast for Argentina

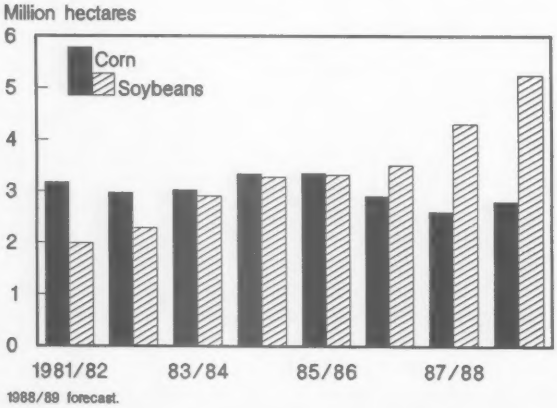
With harvests in the Northern Hemisphere by and large complete, uncertainty now centers around Southern Hemisphere producers, who will soon be completing their summer planting. The most critical country for the trade outlook is probably Argentina. A few months ago, when the U.S. drought sent corn prices soaring, it appeared that Argentine farmers would expand corn sowings dramatically. But now it seems more likely that there will be relatively little change from 1987/88, and production is forecast to increase by only 500,000 tons to 9.5 million.

The Argentine outlook is complicated by weather problems and policy questions. During the past winter season, Argentina experienced its worst drought in decades. Although long-awaited rains fell in late September, some planting was delayed, and subsoil moisture is still deficient.

Prospects for all the summer crops are also clouded by a differential exchange rate policy announced in August. The agricultural sector will receive fewer currency receipts from exports than other sectors, effectively reducing the potential benefits farmers would gain from higher world market prices. Farmers protested this change vehemently.

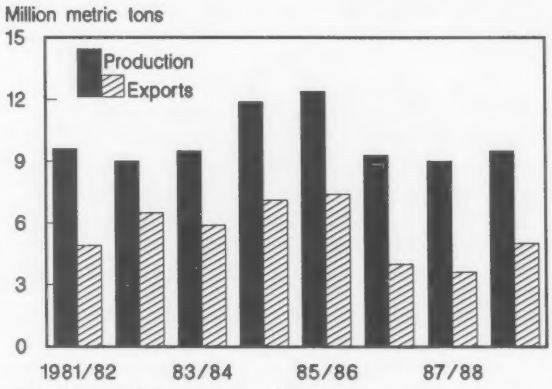
Perhaps the major factor holding back corn area is the continued strength of soybean expansion. The ratio of soybean to corn prices strengthened greatly during 1986/87, and improved slightly more in 1987/88. In recent weeks.

Argentina: Harvested Area of Corn and Soybeans



1988/89 forecast.

Argentina: Corn Production and Exports



1988/89 forecast. Exports for October-September year.

when Argentine farmers were finalizing cropping decisions, soybean prices have remained attractive relative to corn. Area devoted to soybeans, which compete directly with corn for much prime land, has expanded steadily in recent years, while corn area has stagnated. Soybeans are reportedly the most profitable summer crop, and a 22-percent increase in area is forecast for 1988/89, on top of a 23-percent gain the year before.

The area and production of sorghum, a summer crop requiring less moisture, are both forecast to increase in 1988/89 by about 15 percent. Sorghum generally does not compete with soybeans, and the declining area of recent years is related to weather as well as price movements.

A great deal of uncertainty still surrounds oats, for both yields and the amount harvested for grain. This winter crop was probably damaged by drought. Because of damage to pasture and grasslands as well, the amount of oats used for roughage could increase, lowering the availability of oats for export. Argentina's oats exports for 1988/89 are forecast at 300,000 tons, the third largest after Canada and Australia.

Corn planting in South Africa is also drawing to a close. Forecast production is 8 million tons, up 1 million from 1987/88 despite a slight drop in anticipated area. There is always great variability in South African production because of weather, and last year poor conditions at planting restricted area.

The higher prices of recent months would normally encourage corn production in South Africa, particularly since there is no strong alternative summer crop. However, record area for the winter wheat that has just been harvested tied up some potential land for corn. Moreover, there is considerable uncertainty over the net impact of favorable world market developments and of South African policies to discourage corn production. These policies were introduced last year when export prices were lower and substantial sub-

sidies were needed to make South Africa's corn competitive. South Africa's Maize Board adopted a sliding price scale under which higher national output results in lower prices to farmers. Although producer prices are administered by the Maize Board, they are not announced until after the growing season. Some farmers may take a chance on higher prices and plant more.

Higher Soviet Demand Projected To Spur World Trade

Even with prices well above 1987/88 levels, world trade in coarse grains is projected to grow nearly 8 million tons in 1988/89 to 89.2 million. U.S. prices for corn (f.o.b. Gulf ports) in October 1988 were $121 per ton compared with $80 a year earlier. The anticipated increase in coarse grain trade contrasts strongly with world wheat trade, which is likely to fall by nearly 12 million tons in 1988/89. There is some relationship between the two forecasts as coarse grain demand is bolstered by lower world feed wheat supplies. Trade in wheat for feeding is expected to be sharply lower this year.

Increased Soviet demand accounts for most of the projected increase in world trade, with lesser gains likely for East Asia and Eastern Europe. Import growth elsewhere is expected to be relatively modest and probably constrained by higher prices and slow economic growth in most developing countries.

Coarse grain imports by the USSR are forecast at 16 million tons in 1988/89, up from 10.8 million. At the same time, Soviet wheat imports (July-June) are forecast to drop from 21.5 million tons to 13 million because of better domestic wheat production, higher world wheat prices, and lower domestic coarse grain output.

The volume and mix of Soviet grain imports is subject to many uncertainties. One factor is the reform effort initiated by General Secretary Mikhail Gorbachev. Because food shortages are a major cause of discontent, a problem Gorbachev has addressed explicitly, larger imports to increase meat supplies may be important to gain popular support. This would imply large grain imports, and with wheat prices well above coarse grains, the increased imports are expected to be in corn and other coarse grains.

The USSR has also been increasing its imports of other feedstuffs recently. During 1987/88, it purchased record amounts of protein feeds, apparently marking a commitment to reduce the chronic protein deficit in Soviet feeds. Large purchases have continued so far this year. The Soviets have also begun importing, for the first time since 1985, large amounts of tapioca from Thailand. As a source of energy, tapioca could conceivably substitute for corn or other feed grains when combined with protein meal.

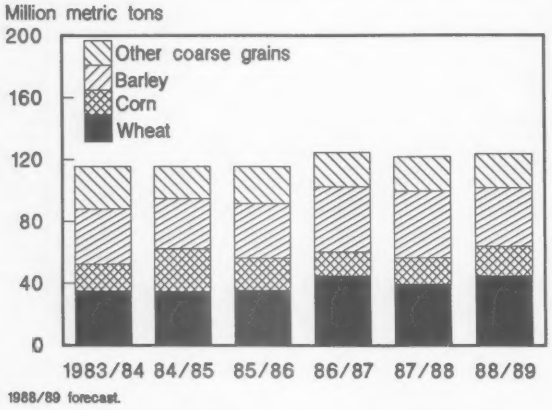
World coarse grain trade: Major exporters and importers by commodity, 1984/85-1988/89 1/

Country	1984/85	1985/86	1986/87	1987/88	1988/89
	Million metric tons				
CORN					
Exporters					
U.S.	46.7	31.5	39.4	43.8	45.2
Argentina	7.1	7.4	4.0	3.6	5.0
China	5.2	6.4	3.8	3.7	3.5
Thailand	3.2	3.8	2.5	0.8	3.2
South Africa	0.2	1.5	2.6	0.6	1.0
Others	4.2	3.9	4.1	3.1	3.0
Total	66.6	54.5	56.2	55.6	60.9
Importers					
Japan	14.0	14.6	16.1	16.7	17.1
USSR	20.3	10.3	7.6	8.4	12.6
EC-12	9.0	4.8	2.8	3.3	3.0
Korea, Rep.	3.0	3.6	4.6	5.1	5.6
Taiwan	3.1	3.1	4.6	4.0	4.0
Mexico	1.7	1.7	3.4	3.0	3.3
China	0.1	0.4	1.6	0.3	0.2
East Europe	1.8	2.2	1.7	2.2	2.6
Brazil	0.2	1.9	1.4	0.0	0.1
Egypt	1.7	1.9	2.4	1.2	1.0
Others	12.2	10.0	11.2	11.5	11.4
Total	66.6	54.5	56.2	55.6	60.9
SORGHUM					
Exporters					
U.S.	7.5	4.1	5.1	6.0	5.3
Argentina	3.4	2.2	1.0	1.2	1.3
Australia	1.2	1.1	0.6	0.6	1.0
Others	1.0	1.3	1.2	0.4	0.7
Total	13.1	8.7	8.0	8.2	8.3
Importers					
Japan	4.6	5.1	4.2	3.9	3.8
Mexico	2.5	0.6	0.8	0.9	0.9
Taiwan	0.6	0.8	0.8	0.2	0.7
Venezuela	0.9	0.8	0.8	1.7	1.4
Israel	0.5	0.5	0.2	0.4	0.4
Others	4.0	0.9	1.2	1.1	1.1
Total	13.1	8.7	8.0	8.2	8.3
BARLEY					
Exporters					
EC-12	7.6	7.3	6.2	7.0	10.5
Canada	2.4	4.8	6.0	3.4	3.5
Australia	4.7	3.7	2.2	1.6	1.8
U.S.	1.2	0.8	3.0	2.7	1.0
Others	2.0	1.9	1.2	0.9	1.0
Total	18.0	18.4	18.5	15.6	17.8
Importers					
Saudi Arabia	4.7	6.6	9.0	4.3	4.5
USSR	4.7	2.9	3.0	2.3	3.0
East Europe	1.7	3.3	1.3	1.7	1.9
Japan	1.7	1.5	1.2	1.3	1.3
Others	5.3	4.0	4.1	6.1	7.1
Total	18.0	18.4	18.5	15.6	17.8
TOTAL COARSE GRAIN TRADE	100.4	83.2	83.9	81.3	89.2

1/ October-September year, excludes intra-EC trade. 1987/88 preliminary. 1988/89 forecast.

One indication of past Soviet import needs has been State grain procurements. Procurements reported to date in 1988/89 are below last year, possibly pointing to higher import needs. This could also reflect a new policy of raising producer prices paid by the State. Farms may be retaining more grain for their own use, and prior years' relationships between procurements and imports may be less relevant for forecasting import needs. In addition, the quality of the

Soviet Feeding of Grains, Estimated by Type



1988/89 forecast.

Soviet crop is reportedly much improved, which would mean a higher proportion of usable grain.

In Korea, expected reductions in wheat imported for feed should contribute to continued strong growth in coarse grain purchases. Korea's imports are forecast to grow 10 percent in 1988/89, on top of an 11-percent jump in 1987/88. Elsewhere in East Asia, a 9-percent increase in Taiwan's coarse grain imports and a 7-percent rise in Malaysia's are expected. Feed demand growth in Taiwan mainly hinges on prospects for its pork exports to Japan. These sales were temporarily suspended by Japan earlier in 1988 because of excessive sulfanilamide residues in the pork. The problem has since been resolved, and expected growth in pork exports in 1989 should mean better prospects for Taiwan's feed grain imports. In Malaysia, poultry and pork production has been increasing rapidly, in part because of environmental restrictions on animal production in neighboring Singapore.

The rate of growth in Japan's coarse grain imports is forecast to remain about 1 percent in 1988/89, about the same as last year. This assumes slightly higher imports of meat and meat products. The proportions of sorghum and corn in mixed feeds will probably depend on the relative import prices of these grains, but Japan's corn's imports are forecast up over 2 percent.

For the second straight year, Eastern Europe's imports are expected to rise because of weather-related production declines. Despite foreign exchange shortages, the region's 1988/89 coarse grain imports are forecast at 4.75 million tons, up 17 percent, after an estimated increase of almost 25 percent in 1987/88. Most of the production drop has been in corn. Summer drought and high temperatures damaged corn crops in Yugoslavia and Romania, the region's major corn producers. Availability and relative prices of the various grains (feed wheat, corn, barley, and rye) will shape the import mix, along with possible credit programs. Another unknown influence will be the amount of wheat feeding from domestic supplies. Eastern Europe has had a record wheat harvest, which will allow both higher wheat exports and higher domestic use.

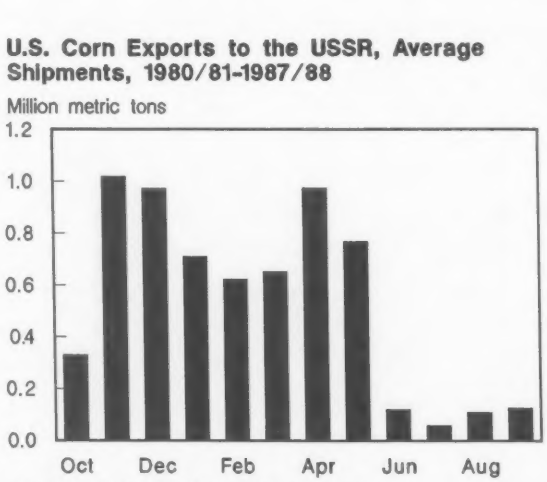
U.S. Corn Sales Expected Up in 1988/89

U.S. corn exports are projected to rise 2.5 percent in 1988/89 to 45.1 million tons. As of November 10th, export commitments were running 19 percent above the same time last year. The strength of U.S. sales is due to rising import demand and relatively tight competitor supplies until later in the marketing year when Southern Hemisphere harvests begin.

Export commitments to Japan, the largest U.S. market, are up substantially so far in 1988/89. However, this largely reflects contacts made a few months ago because of concerns about the drought. For the year, sales will probably be up, but much less than the current commitments would indicate. Commitments to the Soviet Union, the second largest buyer of U.S. corn last year, had reached 4.4 million tons by November 10th, 2.8 million higher than a year earlier. This reflects large purchases made in September for near-term delivery. Most U.S. shipments of corn to the USSR have generally moved between November and May in previous years.

U.S. corn exports to Korea and Taiwan are expected to remain brisk, although Thailand has broken into the Korean market this year. Thai export commitments to Korea are reported at more than 400,000 tons so far, compared with none in 1987/88. U.S. corn exports to Spain will again be made under the EC/U.S. Compensation Agreement. However, a significant portion of the 2 million tons taken from non-EC countries will consist of corn byproducts, mainly corn gluten feed, and not just corn grain. Shipments for calendar 1988 required purchases are expected to be completed by the end of March 1989, in contrast to the 1987 exports, which were not completed until June 1988.

U.S. Corn Exports to the USSR, Average Shipments, 1980/81-1987/88



Source: Foreign Agricultural Trade of the United States.

U.S. exports by leading destinations, 1985/86-1987/88 1/

Country	1985/86	1986/87	1987/88
	Thousand metric tons		
CORN			
Japan	8,919	12,052	14,879
USSR	6,685	3,907	5,119
Korea	1,238	3,702	4,798
Taiwan	2,747	2,996	3,845
Mexico	1,551	2,938	3,172
EC-12	3,602	2,229	2,663
East Europe	1,012	631	1,478
Algeria	326	1,000	1,038
Egypt	1,539	2,183	873
Iraq	182	512	552
Brazil	1,061	1,162	0
China	0	1,027	281
Other	2,242	3,549	5,026
Total	31,104	37,888	43,724
SORGHUM			
Japan	2,412	2,458	2,339
Venezuela	916	708	1,590
Mexico	358	782	698
Israel	423	323	366
EC-12	19	64	199
Taiwan	230	567	175
Other	131	126	473
Total	4,489	5,028	5,840
BARLEY			
Saudi Arabia	42	2,483	1,122
Algeria	0	0	457
Israel	0	64	313
East Europe	60	152	220
Iraq	0	0	219
Japan	153	34	0
Other	174	200	321
Total	429	2,933	2,652

1/ September-August for corn and sorghum, June-May for barley.

Corn sales to Eastern Europe are also likely to remain high in 1988/89, because of low production there. Bulgaria, East Germany, and Yugoslavia are the main buyers. There is the usual uncertainty about U.S. corn exports to Egypt, which dropped sharply in 1987/88. The lack of foreign exchange, the closing of many poultry operations, and policy concerns about liberalized private-sector imports contribute to the mixed outlook. Strong population growth and meat shortages would suggest large feed grain import needs. A recent tender for corn, barley, or sorghum (under which Egypt took some sorghum) may indicate a tendency to substitute other grains for corn if prices are more attractive.

Exports of U.S. corn to Mexico, the fifth largest U.S. market in 1987/88, will also depend on the level of sorghum imports. Mexico imports corn for food use as well as feeding, while sorghum is only imported for feeding. Although domestic production of coarse grains for 1988/89 is forecast to increase slightly, prospects for economic growth and greater meat demand are more uncertain. Lower per capita consumption of meat in recent months appears to have bolstered consumption of corn, the staple grain.

Led by a recovery in Thailand, competitor corn exports in 1988/89 are forecast up by 33 percent or almost 4 million tons. However, this is less than earlier expected because of Argentina's lackluster expansion and another poor year for Eastern Europe. Even if weather in Argentina improves for the remainder of the growing season, allowing normal crop development, most new supplies will not become available until at least March. New crop South African supplies will likewise not be available until May or June. Thus, for the next few months, this leaves few alternative supplies of corn outside the United States.

Argentina's principal corn markets are the Soviet Union and Iran. South Africa's major buyers are Japan and Taiwan. Exports from Thailand, where the 1988/89 corn harvest is basically finished, are expected to go mainly to Asian markets, particularly Malaysia, Singapore, and Korea. Prospects for sales to Japan and Taiwan, two non-traditional Thai markets, woyld hinge on relaxation of aflatoxin limits.

Prospects for China's corn exports depend partly on government decisions. Exports of surplus corn from China's northern provinces are apparently being restricted, and movement of this corn to deficit regions in southern China remains expensive. Most of China's exports are expected to go to its main markets, the USSR and Japan.

Higher world prices may stimulate larger corn exports from other suppliers. The EC has the biggest export potential following excellent harvests in France and Italy. (Italy is usually a top market for corn from France.) Larger EC corn exports are expected to non-EC destinations such as North Africa, Eastern Europe, and possibly the Soviet Union.

Kenya is also forecast to export more corn in 1988/89, following a large crop, with exports projected at 400,000 tons, up from just 40,000 in 1987/88. Crop prospects for Zimbabwe are not clear yet since planting is just ending. Zimbabwe's exports are forecast at 500,000 tons in 1988/89, the same as last year.

EC Projected To Dominate World Barley Trade

With export possibilities for Canada's barley curtailed sharply, and only limited potential for larger exports by other suppliers, the EC could export record amounts of barley in 1988/89. Its exports outside of the EC are forecast to reach 10.5 million tons, up 3.5 million from 1987/88. This implies a 59-percent share of the world barley market, compared with 45 percent in 1987/88. As of late October, EC export license requests for 1988/89 totaled more than 3.7 million tons, compared with about 1.4 million a year earlier.

Canada's drought-reduced barley crop will mean relatively low exports, even with a large drawdown in stocks. Exports for 1988/89 are forecast at 3.5 million tons. In 1987/88, Canada's exports fell by more than 40 percent to 3.4 million tons, as shipments at the end of the year fell sharply.

Australia was poised to increase its 1988/89 barley production and exports in response to the more favorable market. However, hot, dry weather toward the end of the growing season in southern crop areas hurt yield prospects, while large domestic feeding is also cutting into exportable supplies. Australia's 1988/89 exports are forecast at 1.8 million tons, just 200,000 tons above 1987/88.

U.S. barley exports are projected at 1 million tons for 1988/89, down from 2.7 million in 1987/88. Recent sales to Saudi Arabia and Tunisia have been made under the EEP, which accounts for most U.S. exports. Japan has been the main non-EEP market in recent months.

For sorghum, little change is currently projected in total world trade, but U.S. exports are forecast to fall to 5.3 million tons from 6 million in 1987/88. The most important U.S. markets in 1987/88 were Japan, Venezuela, Mexico, Israel, and the EC (all to Spain). In recent weeks, the United States has sold small amounts of sorghum to less traditional markets, including Egypt and the United Kingdom, probably because of attractive prices relative to corn. Some U.S. sorghum has also been sold to Poland in 1988/89 under the EEP. The sorghum market generally consists of a limited number of importers. The USSR has not made large sorghum purchases since 1984/85, but there are recent indications that the Soviets have been buying on the world market for 1988/89.

In addition to uncertain import demand prospects, competitor availabilities will also influence U.S. exports. Both Australia and Argentina are forecast to increase production and exports of sorghum in 1988/89 in response to better prices. Planting should be nearing completion, but dry conditions have been concerns in both countries.

Sharp Drop in World Stocks Projected

For 1988/89, world ending stocks of coarse grains are forecast to drop by 93 million tons to 116 million. This 45-percent decline would place stocks at the lowest level since 1983/84. Most of the change is due to an 81-million-ton projected stock reduction in the United States. Foreign stocks are forecast to decline by only 12 million tons to 63 million, with the largest decreases likely in Canada and China.

World utilization of coarse grains could drop around 1 percent in 1988/89 to 803 million tons, again mainly because of changes in the United States. Even with a prospective drop in Soviet use, total foreign use will be unchanged from 1987/88 at 630 million tons.

The ratio of world ending stocks to use is forecast at 14.4 percent, compared to 25.7 in 1987/88. By recent historical standards, this forecast stocks-to-use ratio is low--just below the 1983/84 ratio of 14.6 and the lowest since 1973/74.

The lower cushion of stocks is one reason for expected higher prices this year. This lower level of carryin stocks could also introduce more volatility to prices in 1989/90 if any big production problems were to surface. Nevertheless, some rebuilding of world coarse grain stocks may occur because of reduced set aside and higher production prospects for the United States.

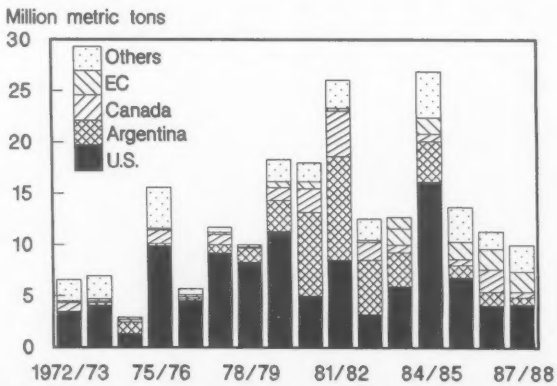
SOVIET GRAIN PURCHASE AGREEMENTS: A SYNOPSIS

The second U.S.-USSR Long Term Grain Agreement (LTA) expired on September 30, 1988. Although there have been a number of negotiations over the past few months, a new agreement or an extension had not been reached as of mid-November. The Soviets have also held negotiations with Argentina recently to consider adjustments in their bilateral agreement, probably discussing the replacement of some of the grain requirements with soybeans and/or soybean products. This reflects a recent trend toward higher sales of soybean products and lower sales of corn and sorghum.

Purchase agreements have covered a significant, but variable, portion of Soviet feed grain and wheat imports in recent years. Some of the agreements specify annual purchase requirements and others multi-year amounts, but do not set prices.

The first LTA with the United States took effect in October 1976 and lasted 5 years. For the United States, an important reason for the agreement was to be able to predict Soviet grain purchases and thereby limit unexpected price surges as in the early 1970's (when the Soviets first entered

USSR Coarse Grain Imports by Supplier



Estimated for July-June year. Others include China, Eastern Europe, and Australia.

the U.S. market for major--but unforeseen--purchases). For the Soviets, the LTA provided some security, after the United States imposed moratoriums on Soviet grain sales in 1974 (due to concerns about U.S. supplies) and in 1975 (due to the market's uncertainty about deteriorating Soviet crop prospects). The first LTA had minimum purchase amounts of 6 million tons, roughly half corn and half wheat. An additional 2 million tons were allowed without consultation, and further amounts could be bought with consultation.

This agreement was extended twice, in 1981 and 1982, and then was followed by the second LTA which took effect in October 1983. This agreement called for minimum annual purchases of 9 million tons of grain, comprised of 4 million tons of corn, 4 million of wheat, and 1 million of corn or wheat, or 500,000 of soybeans/meal (equivalent to 1 million tons of grain). While the USSR bought more than the required amounts of corn in each year, twice it did not buy the required amount of wheat, and once failed to meet the overall minimum, citing as the reason the lack of competitive U.S. prices.

The USSR has a number of other long-term agricultural purchase agreements involving feed grains. Currently, agreements exist with:

o Argentina, for 4 million tons of coarse grains and 500,000 tons of soybeans annually. The agreement runs from December 1986 to November 1991;

o Canada, for a total of 25 million tons of wheat and feed grains, between August 1986 and July 1991;

o China, (as part of an overall bilateral trade protocol) for 7.5 million tons of corn and 2.6 million of soybeans, between 1986 and 1990.

There is also an agreement with Hungary for which full details are unknown. The agreement may involve 500,000 tons of corn and wheat per year. Reportedly, another agreement exists with France, which could involve wheat and/or barley.

The precise role of trade agreements in Soviet buying decisions is unclear. Both the Soviets and their trading partners have shown considerable flexibility in these arrangements, so that the agreements provide only a rough guide to grain trade in any given year. The Soviets do gain some security from these agreements, as analysts have pointed out, by transferring to their suppliers some of the costs for stocking against shortfalls.

BYPRODUCT FEEDS

by
Allen Baker and Mark Ash
Agricultural Economists
Economic Research Service

Abstract: The largest number of mills producing byproduct processed feeds are located in the Corn Belt States, according to the 1982 Census of Manufactures. However, byproduct feeds are available throughout the country, and the type varies with the raw product being processed. Reduced supplies of soybeans in 1988/89 may force prices higher than last year for soybean meal, and feeders will likely have more incentive to use other byproduct feeds.

Keywords: Byproduct feeds, processing mill locations, oilseed meals

Byproducts from processing grains, sugar, and fruits and vegetables, and from livestock and poultry slaughter are used for animal feeds. Animals are also fed cookie crumbs, returned candy bars, and probably other similar products. The byproduct feeds can be lumped into protein sources and energy sources. Examples of protein sources are gluten feed and meal, brewers' and distillers' dried grains, tankage and meat meal, and fish meal and solubles. Energy sources include the fats and mill feeds, inedible molasses, citrus pulp, cannery wastes, garbage, and alfalfa meal. Feeders may be turning to these byproducts as a way to lower costs where performance is not reduced. These byproducts may provide a more economical source of energy or protein feed, and possibly add special nutrients.

Considerations In Use of Byproduct Feeds

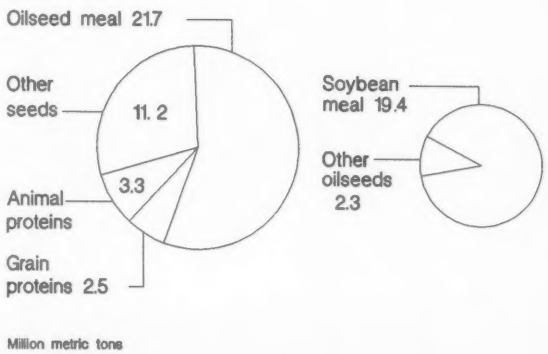
The drought has reduced the size of many crops and raised prices of standard feed ingredients. Furthermore, crops stressed by drought may be more susceptible to aflatoxin, which could further limit the supply of some grains used in feeding particular animals or birds. Feed formulators must consider not only cost but feeding characteristics to be sure that the ration meets the needs of the animal or bird regardless of the ingredients.

Byproduct feeds may have special characteristics. For example, among ruminants, the protein in gluten meal is less soluble in the rumen than other types of protein, and care must be taken that not all of the protein in the ration is of the low solubility type. Another consideration is the amino acid balance in the ration. The animal requires a number of animo acids and can generate internally some of them, but others have to be provided in the ration. Other protein byproduct feeds may be higher in fiber than necessary for certain types of animals or birds. Broilers, for example, are usually fed soybean meal with 49 percent protein, a lower fiber meal than 44 percent protein.

Another factor influencing the choice of byproduct feed is the cost of transportation. The cost of the ration to the feed formulator includes not only feed ingredient price but shipping. For byproduct feeds, as for all feeds, the location of production is important in determining transportation costs. The Corn Belt and Southeast are convenient areas for hog and poultry feeding because they produce soybeans, which are processed by local soybean crushers. There are also several large animal and marine fats and oils plants present in the area according to the 1982 Census of Manufactures. These plants produce animal feed byproducts such as inedible fats, meat meal and tankage, and fishmeal.

Flour and other grain mills are located throughout the United States, providing feeders with a local source of mill feeds. Byproducts from wet corn milling are produced in the Corn Belt, as well as Tennessee and Texas. Brewers' grains are produced in much of the Nation, but the largest number of plants are in the Northeast, Lake States, and Corn Belt. Distillers' grains are produced by many plants in Kentucky, the Corn Belt, and the Northeast States.

Processed Byproduct Feeds, 1987-88



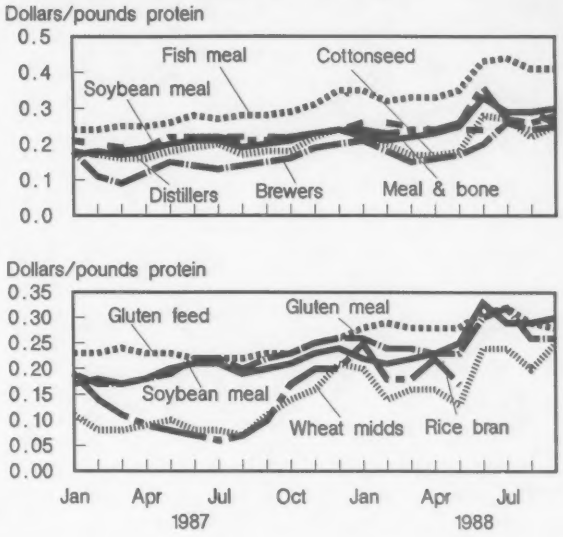
The brewing or distilling process converts starch to alcohol and leaves the protein in the residual. The dried grains are high in protein but are deficient in the same essential amino acids as the original grain, and must be supplemented if fed as a protein source with the original grain. Brewers' and distillers' grains are fed primarily to ruminants and sometimes to hogs. Cottonseed cake and meal are common beef cattle feeds, especially in Texas, Oklahoma, and California, areas in which cottonseed oil mills are located.

Availability also affects byproduct use. While many types of byproduct feeds are available throughout the country, or are plentiful enough to be shipped throughout the country, some others are available only in local areas. For example, grape pumice is primarily available in the major wine-producing areas of California and New York. Dairy cattle in Florida feed on fruit-processing byproducts.

It should be noted, however, that supplies of byproducts (with the notable exception of soybean meal) are more dependent upon the demand for the primary product, than on the demand for additional sources of animal feed. The supply of these byproducts may also be limited at certain times of the year due to the seasonal nature of the processing industry and the lack of facilities to store waste products for an extended time. Many byproducts that are wasted could be used if their cost relative to feeding value justified identifying potential users. Investment in drying and storage to permit wider distribution of byproducts would require research into the nutritional effects and economic advantages of feeding these wastes.

In 1987/88, estimates suggest that high protein feeds compose about 70 percent of the total byproducts fed. Soybean oil meals make up 70 percent of high protein feeds, and nearly 50 percent of all byproduct feeds. In 1988/89, soybean meal use may decline 7 percent from 1987/88 and total oilseed meals may be down 6 percent, mainly from the decline in soy meal. Smaller supplies will likely boost prices for the protein meals, thus encouraging a closer look at other sources of protein that could substitute for soybean meal. However, no data are available on use of such byproducts as citrus pulp, grape pumice, almond hulls, potato processing slurry, cannery waste, garbage, and distillery and brewers' plant waste fed wet.

Relative Feed Ingredient Prices

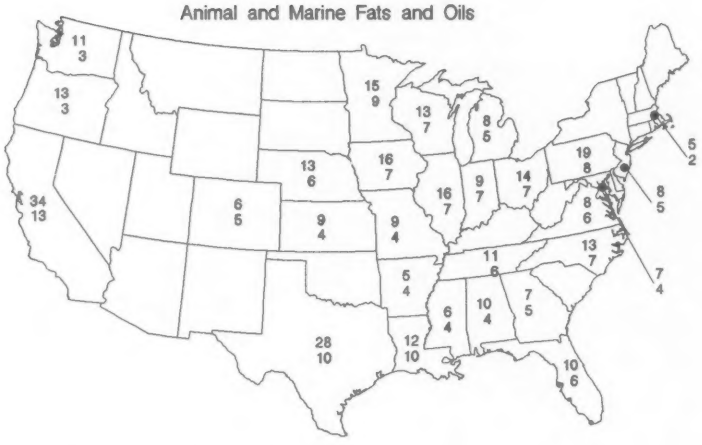


Distribution of Byproduct Feed Producers

Wet Corn Milling

Rice Mills

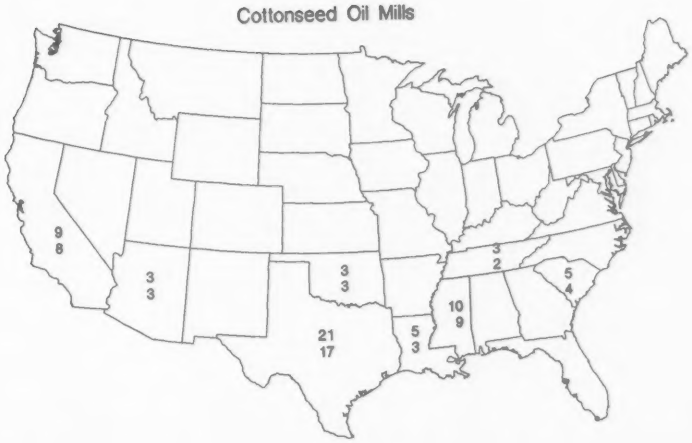
Animal and Marine Fats and Oils



Malt Beverage Producers

Soybean Oil Mills

Cottonseed Oil Mills



Distilled Liquor Producers

Flour and Other Grain Mills

Wines, Brandy and Brandy Spirits Producers

Upper numbers = total mills.
Lower numbers = mills with more than 20 employees.

Source: 1982 Census of Manufacturers.

Table 1.--Feed grains: Marketing year supply, disapp

Year 2/	Supply				Domestic us	
	Beginning stocks	Production	Imports	Total	Food, alcohol, and industrial	Seed
						Million
1983/84	108.6	136.4	0.7	245.7	28.3	1.5
1984/85	39.6	236.9	0.8	277.3	30.6	1.5
1985/86	57.5	274.4	0.9	332.8	33.5	1.5
1986/87	126.4	252.3	0.7	379.4	34.3	1.2
1987/88	152.1	215.2	1.1	368.4	35.3	1.2
1988/89 4/	133.6	141.7	1.4	276.8	35.0	1.3

	Area		
	Set-aside and diverted	Planted	Harvested for grain
	Million hectares		
1983/84	15.9	41.6	32.5
1984/85	2.1	49.5	43.2
1985/86	2.9	51.8	45.1
1986/87	7.3	48.5	41.3
1987/88	12.5	43.1	35.1
1988/89	11.4	41.1	31.8

1/ Aggregated data on corn, sorghum, barley, and oats. 2/ Marketing ye barley. 3/ Includes total Government loans (original and reseal). 4/ Pr diversion payments. 7/ Deficiency payments.

disappearance, area, and prices, 1983/84-1988/89 1/

Disappearance					Ending stocks		
Domestic use			Exports	Total disappearance	Govt. owned	Privately owned 3/	Total
Seed	Feed and residual	Total					
Million metric tons							
1.5	119.7	149.5	56.6	206.1	8.0	31.6	39.6
1.5	131.1	163.2	56.6	219.8	8.9	48.6	57.5
1.5	134.9	169.9	36.6	206.5	20.4	105.9	126.3
1.2	145.5	181.0	46.3	227.3	48.8	103.3	152.1
1.2	145.6	182.1	52.6	230.8	31.4	106.2	133.6
1.3	136.6	172.9	51.3	224.2			52.6

Harvested for grain	Yield per harvested hectare	Index Average price received by farmers-5/	Government-support program Total payments to participants
- - - -	Metric tons	1977=100	Million dollars
32.5	4.20	156	6/ 1,103
43.2	5.48	130	7/ 1,860
45.1	6.07	108	7/ 2,785
41.3	6.3	6	6/ 7,343
35.1	6.13	17	6/ 8,361
31.8	4.45		

eting year beginning September 1 for corn and sorghum, June 1 for oats and
. 4/ Projected. 5/ Excludes support payments. 6/ Deficiency and

Table 2.--Foreign coarse grains: Supply and disappearance, 1980/81 - 1988/89 1/

Year	Beginning stocks	Production	Disappearance Feed	Disappearance Total	Imports	Adjusted imports 2/	Ending stocks
			Million metric tons				
CORN							
1980/81	45.8	240.0	168.4	291.8	79.1	78.1	48.9
1981/82	48.9	235.1	175.9	295.7	77.6	67.3	43.8
1982/83	43.8	230.3	174.6	288.9	73.2	63.3	39.1
1983/84	39.1	241.4	167.7	286.2	64.9	61.1	39.8
1984/85	39.8	263.8	183.6	303.6	72.4	66.6	47.4
1985/86	47.4	254.2	186.0	291.6	62.0	54.5	41.3
1986/87	41.3	267.5	193.4	309.4	61.1	56.2	37.5
1987/88 3/	37.5	265.4	191.1	310.3	63.6	55.6	36.5
1988/89 4/	36.5	267.3	203.8	319.2	69.5	60.9	29.5
SORGHUM							
1980/81	6.9	44.6	23.3	49.3	12.8	14.1	8.1
1981/82	8.1	48.2	28.5	55.7	14.3	13.7	7.4
1982/83	7.4	44.0	25.2	51.2	12.3	11.6	6.1
1983/84	6.1	46.5	25.8	52.9	13.1	13.0	6.5
1984/85	6.5	44.1	26.1	52.2	12.9	13.1	6.0
1985/86	6.0	42.0	25.0	47.5	9.6	8.7	5.0
1986/87	5.0	40.7	23.2	46.2	8.1	8.0	4.5
1987/88 3/	4.5	36.2	22.5	43.2	8.8	8.2	3.4
1988/89 4/	3.4	41.7	23.6	47.5	9.1	8.3	2.7
BARLEY							
1980/81	16.9	155.4	107.5	156.0	16.3	14.0	17.1
1981/82	17.1	144.9	105.4	149.6	20.4	14.1	14.4
1982/83	14.4	155.6	107.8	152.9	17.2	13.3	17.9
1983/84	17.9	153.6	115.4	159.3	20.3	16.5	12.9
1984/85	12.9	161.7	115.8	157.0	23.1	18.0	19.1
1985/86	19.1	164.4	120.3	161.1	22.2	18.4	22.6
1986/87	22.6	168.6	125.0	169.0	24.1	18.5	25.0
1987/88 3/	25.0	169.7	127.2	175.4	19.8	15.6	21.8
1988/89 4/	21.8	159.3	122.8	162.5	20.6	17.8	19.3
TOTAL COARSE GRAINS 5/							
1980/81	77.4	533.5	342.0	591.1	110.3	108.1	81.5
1981/82	81.5	519.9	351.7	593.1	114.5	97.5	72.8
1982/83	72.8	533.3	357.1	593.0	104.0	89.5	73.2
1983/84	73.2	550.1	364.6	604.4	100.2	92.8	70.9
1984/85	70.9	576.4	377.4	617.1	111.1	99.6	85.9
1985/86	85.9	566.7	387.3	606.9	95.8	82.2	81.4
1986/87	81.4	580.6	394.8	627.7	95.0	83.3	79.7
1987/88 3/	79.7	574.0	394.3	630.3	94.4	80.6	74.9
1988/89 4/	74.9	567.8	407.1	629.7	100.9	88.2	62.9

1/ Aggregated on basis of local marketing years, except for adjusted imports. 2/ Based on Oct/Sept. trade year and excludes intra-EC trade. 3/ Preliminary. 4/ Forecast. 5/ Also includes oats, rye, millet, and mixed grains.

Source: Compiled from World Grain Situation and Outlook, FAS, and USDA data.

Table 3.--Corn: Marketing year supply and disappearance,

Year beginning September 1	Supply				Disappea		
	Begin-ning stocks	Produc-tion	Imports	Total	Domestic use		
					Food, alcohol, and industrial	Seed	Feed and residual
	Million bushel						
1983/84	3,523.1	4,174.7	2.7	7,700.5	956.0	19.1	3,817.6
1984/85	1,006.3	7,674.0	3.5	8,683.8	1,070.0	21.2	4,079.0
1985/86	1,648.2	8,876.7	10.6	10,535.5	1,140.0	19.5	4,095.3
1986/87	4,039.5	8,249.9	2.1	12,291.5	1,175.0	16.7	4,713.7
1987/88	4,881.7	7,064.1	4.0	11,949.8	1,212.0	17.2	4,726.5
1988/89 2/	4,259.6	4,671.2	5.0	8,935.8	---1,215.0---		4,500.0

	Area			Yield per harvested acre	Received by farmers 3/	Ave St. Lo No. 2 Yello
	Set-aside and diverted	Planted	Harvested for grain			
	Million acres			Bushels		
1983/84	32.2	60.2	51.5	81.1	3.21	3.49
1984/85	4.0	80.5	71.9	106.7	2.63	2.81
1985/86	5.4	83.4	75.2	118.0	2.23	2.37
1986/87	14.3	76.7	69.2	119.3	1.50	1.68
1987/88	23.0	65.7	59.2	119.4	1.94	2.05
1988/89	0.8	67.5	56.7	82.3	2.40-2.80	

1/ Includes quantity under loan and Farmer-Owned reserve. 2/ Projected. 3/ Exc
5/ Deficiency payments. 6/ Deficiency and diversion payments.

rance, area, and prices, 1983/84-1988/89

isappearance				Ending stocks Aug. 30		
eed and idual-	Total	Exports	Total disappearance	Govt. owned	Privately owned 1/	Total
bushels						
817.6	4,792.7	1,901.5	6,694.2	201.5	804.8	1,006.3
079.0	5,170.2	1,865.4	7,035.6	224.9	1,423.3	1,648.2
095.3	5,254.8	1,241.2	6,496.0	545.7	3,493.8	4,039.5
713.7	5,905.4	1,504.4	7,409.8	1,443.2	3,438.5	4,881.7
726.5	5,955.7	1,734.5	7,690.2	835.0	3,424.6	4,259.6
500.0	5,715.0	1,775.0	7,490.0			1,445.8

Average prices				Government-support program		
St. Louis- No. 2 Yellow	Omaha- No. 2 Yellow	Gulf Ports No. 2 Yellow	National average loan rate	Target price	Total payments to participants
Dollars per bushel					Mil. dol.	
3.49	3.23	3.67	2.65	2.86	4/ 904
2.81	2.65	3.00	2.55	3.03	5/ 1,654
2.37	2.25	2.52	2.55	3.03	5/ 2,470
1.68	1.53	1.83	1.92	3.03	6/ 6,330
2.05	1.85	2.25	1.82	3.03	6/ 7,281
			1.77	2.93	

3/ Excludes support payments. 4/ Diversion payments.

Table 4.--Sorghum: Marketing year supply and disappearance, a

Year beginning September 1	Supply				Disappearance			
	Beginning stocks	Production	Imports	Total	Domestic use			
					Food, alcohol, and industrial	Seed	Feed and residual	T
	Million bushels							
1983/84	439.1	487.5	0.1	926.7	7.7	2.3	384.7	3
1984/85	287.4	866.2	0.1	1,153.7	15.3	2.0	539.3	5
1985/86	300.2	1,120.3	---	1,420.5	26.0	1.7	663.8	6
1986/87	551.0	938.1	---	1,489.1	13.0	1.6	532.9	5
1987/88	743.3	740.9	---	1,484.2	12.6	1.4	576.1	5
1988/89 2/	662.7	546.3	---	1,209.0	- - 15.0 - -		550.0	5

	Area			Yield per harvested acre	Average price		
	Set-aside and diverted	Planted	Harvested for grain		Received by farmers 3/	Kansas City No. 2 Yellow	Tex No Yel
	Million acres			Bushels			D
1983/84	5.7	11.9	10.0	48.7	4.89	5.22	5.
1984/85	0.6	17.3	15.4	56.4	4.15	4.46	5.
1985/86	0.9	18.3	16.8	66.8	3.45	3.72	4.
1986/87	2.7	15.3	13.9	67.7	2.45	2.73	3.
1987/88	4.1	11.8	10.6	69.9	3.03	3.40	3.
1988/89	4.0	10.5	9.0	60.6	3.85-4.55		

1/ Includes quantity under loan and Farmer-Owned Reserve. 2/ Projected. 3/ Exclud
5/ Deficiency payments. 6/ Deficiency and diversion payments.

rance, area, and prices, 1983/84-1988/89

earance			Ending stocks Aug. 30			
l : Total	Exports	Total disappearance	Govt. owned	Privately owned 1/	Total	
nal						
ushels						
7	394.7	244.6	639.3	102.8	184.6	287.4
3	556.6	296.9	853.5	112.1	188.1	300.2
8	691.5	178.0	869.5	207.2	343.8	551.0
9	547.5	198.3	745.8	409.0	334.3	743.3
1	590.1	231.4	821.5	463.6	199.1	662.7
0	565.0	200.0	765.0			444.0

ge prices			Government support program		
ity: Texas : No. 2 : Yellow	Gulf ports No. 2 Yellow	National average loan rate	Target price	Total payments to participants	
- - - Dollars per cwt. - - - - - - - - - - - -				Mil.dol.	
5.53	5.77	4.50	4.86	4/ 114	
5.04	4.90	4.32	5.14	5/ 158	
4.33	4.07	4.32	5.14	5/ 228	
3.24	3.21	3.25	5.14	6/ 585	
3.55	3.74	3.11	5.14	6/ 722	
		3.00	4.96		

/ Excludes support payments. 4/ Diversion payments.

Table 5.--Barley: Marketing year supply and disapp

Year beginning June 1	Supply: Beginning stocks	Supply: Production	Supply: Imports	Supply: Total	Domestic us: Food, alcohol, and industrial	Domestic us: Seed	Di: re
							Millio
1983/84	216.7	508.9	7.1	732.7	149.5	19.5	
1984/85	189.4	599.2	10.1	798.7	149.0	21.6	
1985/86	247.4	591.4	9.0	847.8	147.2	21.4	
1986/87	324.8	610.5	8.7	944.0	156.1	17.9	
1987/88	335.6	529.5	13.7	878.8	156.1	17.9	
1988/89 2/	321.2	282.6	20.0	623.8	------ 175 ------		
	Area: Set-aside and diverted	Area: Planted	Area: Harvested for grain	Yield per harvested acre	Received by farmers 3/	A: No. bet fe	
	- - - - - Million acres - - -			Bushels	- - - - - - - -	Dol	
1983/84	1.1	10.4	9.7	52.3	2.47	2.	
1984/85	0.5	12.0	11.2	53.4	2.29	2.	
1985/86	0.7	13.2	11.6	51.0	1.98	1.	
1986/87	2.0	13.1	12.0	50.8	1.61	1.	
1987/88	2.9	11.0	10.1	52.7	1.81	1.	
1988/89	2.9	9.7	7.4	38.2	2.50-2.90		

1/ Includes quantity under loan and Farmer-Owned Reserve. 2/ Projected. to Duluth. 5/ Deficiency payments. 6/ Deficiency and diversion payments.

d disappearance, area, and prices, 1983/84-1988/89

Disappearance					Ending stocks May 31		
estic use							
Seed	Feed and residual	Total	Exports	Total disappearance	Govt. owned	Privately owned 1/	Total
Million bushels							
19.5	282.8	451.8	91.4	543.3	11.9	177.5	189.4
21.6	303.9	474.5	76.8	551.3	14.6	232.8	247.4
21.4	332.6	501.2	21.8	523.0	57.4	267.4	324.8
17.9	297.7	471.7	136.7	608.4	75.5	260.9	335.6
17.9	257.5	431.5	126.1	557.6	50.1	270.9	321.2
----	239.8	414.8	50.0	464.8			159.0

Average prices				Government-support program		
	Minneapolis		Portland	National average loan rate	Target price	Total payments to participants
/	No. 2 or better feed 4/	No. 3 or better malting	No. 2			
- -	Dollars per bushel - - - - - - - - - - - - - - - - - -					Mil. dol.
	2.48	2.84	2.91	2.16	2.60	6/ 72
	2.09	2.55	2.59	2.08	2.60	5/ 50
	1.53	2.24	2.23	2.08	2.60	5/ 160
	1.44	1.89	1.96	1.56	2.60	6/ 346
	1.78	2.04	2.09	1.49	2.60	6/ 333
0				1.44	2.51	

ojected. 3/ Excludes support payments. 4/ Starting March 1987, shifted
ayments.

Table 6.--Oats: Marketing year supply and disap

Year beginning June 1	Supply: Beginning stocks	Supply: Production	Supply: Imports	Supply: Total	Domestic: Food and industrial	Domestic: Seed
						Mil
1983/84	219.8	477.0	30.1	726.9	40.9	31.9
1984/85	181.1	473.7	34.0	688.8	41.0	34.6
1985/86	179.9	520.8	27.5	728.2	44.0	38.4
1986/87	183.7	386.4	33.3	603.4	45.0	31.5
1987/88	132.7	374.0	46.3	553.0	46.0	33.0
1988/89 2/	112.0	210.8	60.0	382.8	------ 86 ------	

	Area: Set-aside and diverted	Area: Planted	Area: Harvested for grain	Yield per harvested acre	Received by farmers 3/	Mi
	- - - - - - Million acres - - -			-Bushels	- - - - - - - - -	
1983/84	0.3	20.3	9.1	52.6	1.62	
1984/85	0.1	12.4	8.2	58.0	1.67	
1985/86	0.1	13.3	8.2	63.7	1.23	
1986/87	0.5	14.7	6.9	56.3	1.21	
1987/88	0.8	18.0	6.9	54.0	1.56	
1988/89	0.3	13.9	5.4	39.1	2.50-2.85	

1/ Includes quantity under loan and Farmer-Owned Reserve. 2/ Project
payments. 5/ Deficiency payments.

nd disappearance, area, and prices, 1983/84-1988/89

Disappearance: Domestic use: Seed	Disappearance: Domestic use: Feed and residual	Disappearance: Domestic use: Total	Disappearance: Exports	Disappearance: Total disappearance	Ending stocks May 31: Govt. owned	Ending stocks May 31: Privately owned 1/	Ending stocks May 31: Total
Million bushels							
31.9	470.9	543.7	2.1	545.8	1.5	179.6	181.1
34.6	432.0	507.6	1.3	508.9	1.4	178.5	179.9
38.4	459.9	542.3	2.2	544.5	1.9	181.8	183.7
31.5	392.4	467.9	2.8	470.7	3.5	129.2	132.7
33.0	360.0	439.0	1.0	441.0	3.5	108.5	112.0
------	214.8	300.8	1.0	301.8			81.0

Average prices: ived : Minneapolis No. 2 white, heavy	Average prices: Portland No. 2 white, heavy	Average prices: Toledo No. 2	Government-support program: National average loan rate	Government-support program: Target price	Government-support program: Total payments to participants
y :					
rs 3/:					
- - - - Dollars per bushel - - - - - - - - - - - - - - - -					Mil. dol.
62	1.87	1.95	2.01	1.36	1.60	4/ 13
67	1.81	2.12	1.92	1.31	1.60	---
23	1.31	1.60	1.08	1.31	1.60	5/ 8
21	1.46	1.53	1.20	.99	1.60	4/ 32
56	1.92		1.68	.94	1.60	4/ 25
2.85				.90	1.55	

Projected. 3/ Excludes support payments. 4/ Deficiency and diversion

Table 7.--Corn: Marketing year supply and disappearance,

Year beginning September 1	Supply				Disapp		
	Begin-ning stocks	Produc-tion	Imports	Total	Domestic use		
					Food, alcohol, and industrial	Seed	Feed and residual
	Million bushels						
1983/84							
Sept.-Nov.	3,523.1	4,174.7	0.5	7,698.3	238.6	---	1,311.0
Dec.-Feb.	5,651.7	---	0.6	5,652.3	222.8	---	1,056.0
Mar.-May	3,865.0	---	1.0	3,866.0	247.3	16.8	939.5
June-Aug.	2,145.1	---	0.6	2,145.7	247.3	2.3	511.1
Mkt. year	3,523.1	4,174.7	2.7	7,700.5	956.0	19.1	3,817.6
1984/85							
Sept.-Nov.	1,006.3	7,674.0	0.9	8,681.2	249.7	---	1,294.2
Dec.-Feb.	6,631.1	---	0.4	6,631.5	241.5	---	1,182.9
Mar.-May	4,623.2	---	1.1	4,624.3	283.8	17.0	1,009.1
June-Aug.	2,835.5	---	1.1	2,836.6	295.0	4.2	592.8
Mkt. year	1,006.3	7,674.0	3.5	8,683.8	1,070.0	21.2	4,079.0
1985/86							
Sept.-Nov.	1,648.2	8,876.7	1.0	10,525.9	278.0	---	1,215.5
Dec.-Feb.	8,614.7	---	1.3	8,616.0	264.0	---	1,299.6
Mar.-May	6,587.1	---	2.3	6,589.4	293.0	16.1	1,085.9
June-Aug.	4,990.0	---	6.0	4,996.0	305.0	3.4	494.3
Mkt. year	1,648.2	8,876.7	10.6	10,535.5	1,140.0	19.5	4,095.3
1986/87							
Sept.-Nov.	4,039.5	8,249.9	0.8	12,290.2	280.0	---	1,383.6
Dec.-Feb.	10,305.5	---	0.3	10,305.8	270.0	---	1,472.2
Mar.-May	8,248.2		.5	8,248.7	310.0	16.4	1,089.9
June-Aug.	6,332.2		.5	6,332.7	315.0	.3	768.0
Mkt. year 2/	4,039.5	8,249.9	2.1	12,291.5	1,175.0	16.7	4,713.7
1987/88							
Sept.-Nov.	4,881.7	7,064.1	0.6	11,946.4	292.0	---	1,487.9
Dec.-Feb.	9,768.5	---	0.9	9,769.4	282.0	---	1,443.9
Mar.-May 3/	7,635.2	---	1.6	7,636.8	315.0	16.7	955.8
June-Aug.3/	5,835.5	---	0.9	5,836.4	323.0	0.5	838.9
Mkt. year 2/	4,881.7	7,064.1	4.0	11,949.8	1,212.0	17.2	4,726.5
1988/89							
Mkt. year 3/	4,259.6	4,671.2	5.0	8,935.7	- - 1,215.0 - -		4,500.0

l/ Includes quantity under loan and Farmer-Owned Reserve. 2/ Preliminary. 3/

arance, specified periods, 1983/84 to date

--Disappearance--				Ending stocks		
e- Feed and esidual-	Total	Exports	Total disap- pearance	Govt. owned	Privately: owned 1/	Total
s						
,311.0	1,549.6	497.0	2,046.6	1,227.0	4,424.7	5,651.7
,056.0	1,278.8	508.5	1,787.3	1,214.0	2,651.0	3,865.0
939.5	1,203.6	517.3	1,720.9	195.0	1,950.1	2,145.1
511.1	760.7	378.7	1,139.4	201.5	804.8	1,006.3
,817.6	4,792.7	1,901.5	6,694.2	201.5	804.8	1,006.3
,294.2	1,543.9	506.2	2,050.1	206.7	6,424.4	6,631.1
,182.9	1,424.4	583.9	2,008.3	209.7	4,413.5	4,623.2
,009.1	1,309.9	478.9	1,788.8	221.7	2,613.8	2,835.5
592.8	892.0	296.4	1,188.4	224.9	1,423.3	1,648.2
,079.0	5,170.2	1,865.4	7,035.6	224.9	1,423.3	1,648.2
,215.5	1,493.5	417.7	1,911.2	388.6	8,226.1	8,614.7
,299.6	1,563.6	465.3	2,028.9	509.4	6,077.7	6,587.1
,085.9	1,395.0	204.4	1,599.4	550.9	4,439.1	4,990.0
494.3	802.7	153.8	956.5	545.7	3,493.8	4,039.5
,095.3	5,254.8	1,241.2	6,496.0	545.7	3,493.8	4,039.5
,383.6	1,663.6	321.1	1,984.7	968.2	9,337.3	10,305.5
,472.2	1,742.2	315.4	2,057.6	1,362.2	6,886.0	8,248.2
,089.9	1,416.3	500.2	1,916.5	1,491.5	4,840.7	6,332.2
768.0	1,083.3	367.7	1,451.0	1,443.2	3,438.5	4,881.7
,713.7	5,905.4	1,504.4	7,409.8	1,443.2	3,438.5	4,881.7
,487.9	1,779.9	398.0	2,177.9	1,683.4	8,085.1	9,768.5
,443.9	1,725.9	408.3	2,134.2	1,767.7	5,867.5	7,635.2
955.8	1,287.5	513.8	1,801.3	1,304.9	4,530.6	5,835.5
838.9	1,162.4	414.4	1,576.8	835.0	3,424.6	4,259.6
,726.5	5,955.7	1,734.5	7,690.2	835.0	3,424.6	4,259.6
,500.0	5,715.0	1,775.0	7,490.0	25.0	1,196.0	1446.0

ry. 3/ Projected.

Table 8.--Sorghum: Marketing year supply and disappeara

Year beginning September 1	Supply: Begin-ning stocks	Supply: Produc-tion	Supply: Imports	Supply: Total	Domestic use: Food, alcohol, and industrial	Domestic use: Seed	Domestic use: Fee and resid
					Million b		
1982/83							
Sept.-May	318.6	835.1	0	1,153.7	6.0	0.9	45
June-Aug.	529.1	0	0	529.1	1.9	0.9	4
Mkt. year	318.6	835.1	0	1,153.7	7.9	1.8	49
1983/84							
Sept.-May	439.1	487.5	0	926.6	5.7	1.1	35
June-Aug.	368.9	0	0.1	369.0	2.0	1.2	2
Mkt. year	439.1	487.5	0.1	926.7	7.7	2.3	38
1984/85							
Sept.-May	287.4	866.2	0.1	1,153.7	12.4	1.5	54
June-Aug.	360.8	0	0	360.8	2.9	0.5	-
Mkt. year	287.4	866.2	0.1	1,153.7	15.3	2.0	53
1985/86							
Sept.-May	300.2	1,120.3	0	1,420.5	22.1	1.2	62
June-Aug.	630.0	0	0	630.0	3.9	0.5	3
Mkt. year	300.2	1,120.3	0	1,420.5	26.0	1.7	66
1986/87							
Sept.-May	551.0	938.1	0	1,489.1	11.0	1.0	48
June-Aug.	835.0	0	0	835.0	2.0	.6	4
Mkt. year	551.0	938.1	0	1,489.1	13.0	1.6	53
1987/88 2/							
Sept. May	743.3	740.9	0	1,484.2	10.0	.8	48
June-Aug 3/	807.8	0	0	807.8	2.6	.6	9
Mkt. year	743.3	740.9	0	1,484.2	12.6	1.4	57
1988/89							
Mkt. year 3/	662.7	546.3	0	1,209.0	- -15.0 - -		55

l/ Includes quantity under loan and Farmer-Owned Reserve. 2/ Preliminary.

sappearance, specified periods, 1982/83 to date

c use			Disappearance			Ending stocks		
d	Feed and residual	Total	Exports	Total disappearance	Govt. owned	Privately owned 1/	Total
illion bushels							
9	453.5	460.4	164.2	642.6	54.0	475.1	529.1
9	41.3	44.1	45.9	90.0	171.5	267.6	439.1
8	494.8	504.5	210.1	714.6	171.5	267.6	439.1
1	356.5	363.3	194.4	557.7	78.0	290.9	368.9
2	28.2	31.4	50.2	81.6	102.8	184.6	287.4
3	384.7	394.7	244.6	639.3	102.8	184.6	287.4
5	542.2	556.1	236.8	792.9	111.1	249.7	360.8
5	-2.9	0.5	60.1	60.6	112.1	188.1	300.2
0	539.3	556.6	296.9	853.5	112.1	188.1	300.2
2	626.9	650.2	140.3	790.5	181.4	447.5	630.0
5	36.9	41.3	37.7	79.0	207.2	343.8	551.0
7	663.8	691.5	178.0	869.5	207.2	343.8	551.0
0	487.3	499.3	154.8	654.1	400.4	434.6	835.0
6	45.6	48.2	43.5	91.7	408.9	334.4	743.3
6	532.9	547.5	198.3	745.8	408.9	334.4	743.3
8	480.2	491.0	185.4	676.4	511.4	296.4	807.8
6	95.9	99.1	46.0	145.1	463.6	199.1	662.7
4	576.1	590.1	231.4	821.5	463.6	199.1	662.7
-	550.0	565.0	200.0	765.0	37.5	69.0	444.0

minary. 3/ Projected.

Table 9.--Average prices received by farmers, United States, by months, 1982-88 1/

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average 2/
						Dollars per bushel							
Corn													
1982	2.15	1.98	2.13	2.26	2.36	2.56	2.71	2.95	3.03	3.04	3.13	3.35	2.55
1983	3.32	3.15	3.17	3.15	3.15	3.11	3.21	3.32	3.34	3.36	3.30	3.12	3.21
1984	2.90	2.65	2.55	2.56	2.64	2.62	2.67	2.70	2.68	2.64	2.60	2.44	2.63
1985	2.29	2.11	2.21	2.29	2.33	2.32	2.29	2.30	2.39	2.32	2.00	1.73	2.23
1986	1.45	1.40	1.47	1.50	1.48	1.42	1.47	1.52	1.66	1.69	1.60	1.47	1.50
1987	1.49	1.56	1.62	1.72	1.77	1.83	1.86	1.88	1.95	2.41	2.72	2.65	1.94
1988	2.60												
						Dollars per cwt							
Sorghum													
1982	3.80	3.70	3.78	3.97	4.09	4.42	4.67	4.92	5.05	5.05	5.03	5.29	4.41
1983	5.26	5.01	4.98	4.93	4.92	4.74	4.85	5.00	5.08	4.94	4.64	4.58	4.89
1984	4.24	4.05	4.05	4.15	4.16	4.10	4.24	4.46	4.54	4.52	4.04	3.74	4.15
1985	3.27	3.30	3.47	3.76	3.69	3.55	3.67	3.80	3.99	3.43	3.06	2.66	3.45
1986	2.36	2.34	2.38	2.41	2.37	2.36	2.44	2.58	2.69	2.79	2.66	2.52	2.45
1987	2.43	2.48	2.69	2.72	2.75	2.88	2.92	2.94	2.91	4.13	4.56	4.39	3.03
1988	4.24												

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average 2/
						Dollars per bushel							
Oats													
1982	1.88	1.57	1.39	1.35	1.32	1.40	1.44	1.46	1.48	1.49	1.54	1.54	1.49
1983	1.51	1.46	1.45	1.55	1.62	1.67	1.73	1.81	1.88	1.81	1.82	1.84	1.62
1984	1.80	1.68	1.62	1.60	1.69	1.64	1.72	1.74	1.69	1.68	1.68	1.60	1.67
1985	1.59	1.31	1.16	1.10	1.08	1.17	1.20	1.18	1.16	1.14	1.13	1.21	1.23
1986	1.10	.90	.86	.99	1.10	1.32	1.44	1.46	1.47	1.45	1.50	1.57	1.21
1987	1.52	1.29	1.41	1.49	1.61	1.62	1.76	1.78	1.85	1.78	1.82	1.84	1.56
1988	2.68	2.86	2.54	2.56									
Barley													
1982	2.39	2.16	2.20	2.17	1.98	2.06	2.19	2.16	2.00	2.09	2.22	2.36	2.18
1983	2.32	2.20	2.34	2.46	2.53	2.55	2.55	2.55	2.47	2.50	2.54	2.78	2.47
1984	2.61	2.54	2.26	2.25	2.29	2.25	2.19	2.24	2.21	2.18	2.16	2.22	2.29
1985	2.14	2.08	1.98	1.88	1.96	2.05	2.07	2.05	1.95	1.88	1.85	1.73	1.98
1986	1.57	1.67	1.51	1.45	1.58	1.69	1.62	1.60	1.63	1.69	1.69	1.76	1.61
1987	1.75	1.84	2.00	1.87	1.73	1.88	1.83	1.77	1.74	1.64	1.74	1.79	1.81
1988	2.46	2.97	2.96	2.88									
Malting Barley													
1982	2.26	2.10	2.38	2.58	2.22	2.26	2.39	2.32	2.00	2.09	2.13	2.18	2.24
1983	2.05	2.06	2.50	2.69	2.72	2.61	2.61	2.50	2.47	2.46	2.54	2.53	2.48
1984	2.52	2.48	2.50	2.52	2.52	2.39	2.18	2.29	2.11	2.17	2.17	2.10	2.33
1985	2.02	2.13	2.49	2.33	2.24	2.32	2.19	2.13	1.99	1.93	1.85	1.66	2.11
1986	1.52	2.07	2.23	1.85	1.83	1.80	1.65	1.70	1.69	1.69	1.65	1.66	1.78
1987	1.68	2.04	2.55	2.39	1.88	2.07	2.01	2.11	1.80	1.68	1.76	1.81	
1988	2.80	3.27	3.38	3.44									
Feed Barley													
1982	2.52	2.23	1.98	1.91	1.87	1.94	1.98	2.07	1.99	2.08	2.26	2.43	2.11
1983	2.52	2.31	2.23	2.41	2.45	2.51	2.52	2.58	2.47	2.54	2.55	2.86	2.50
1984	2.72	2.60	2.10	2.13	2.19	2.19	2.20	2.22	2.27	2.19	2.16	2.30	2.27
1985	2.26	2.05	1.75	1.74	1.85	1.90	2.03	2.00	1.90	1.83	1.85	1.81	1.76
1986	1.61	1.44	1.21	1.33	1.49	1.62	1.59	1.56	1.61	1.69	1.71	1.84	1.56
1987	1.79	1.67	1.54	1.57	1.66	1.68	1.63	1.64	1.68	1.59	1.73	1.76	
1988	2.07	2.34	2.37	2.39									

1/ Prices do not include an allowance for loans outstanding and government purchases. 2/ U.S. average prices based on U.S. monthly prices weighted by monthly marketings.

Source: Agricultural Prices, Agricultural Statistics Board, USDA.

Table 10.--Cash prices at principal markets, 1982-1987

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
						Dollars per bushel							
CORN No. 2 Yellow, Central Illinois													
1982	2.14	1.94	2.24	2.28	2.35	2.62	2.82	3.08	3.09	3.14	3.26	3.58	2.71
1983	3.46	3.36	3.37	3.27	3.21	3.15	3.37	3.45	3.44	3.44	3.28	3.16	3.33
1984	2.92	2.66	2.61	2.56	2.64	2.64	2.68	2.72	2.69	2.64	2.59	2.46	2.65
1985	2.28	2.10	2.32	2.38	2.36	2.33	2.29	2.31	2.42	2.41	1.93	1.52	2.22
1986	1.34	1.34	1.55	1.52	1.44	1.38	1.46	1.56	1.75	1.74	1.60	1.46	1.51
1987	1.52	1.65	1.74	1.78	1.85	1.89	1.92	1.92	1.97	2.59	2.86	2.71	2.03
1988	2.69												
CORN No. 2 Yellow, St. Louis													
1982	2.32	2.12	2.43	2.49	2.52	2.79	2.99	3.24	3.24	3.27	3.39	3.68	2.87
1983	3.60	3.50	3.53	3.45	3.41	3.31	3.55	3.61	3.58	3.57	3.43	3.33	3.49
1984	3.09	2.84	2.77	2.75	2.86	2.84	2.86	2.88	2.81	2.79	2.72	2.47	2.81
1985	2.38	2.27	2.50	2.59	2.55	2.50	2.42	2.46	2.56	2.52	2.01	1.67	2.37
1986	1.47	1.46	1.68	1.69	1.61	1.57	1.65	1.74	1.93	1.92	1.79	1.65	1.68
1987	1.65	1.78	1.91	1.97	2.05	2.07	2.09	2.10	2.13	2.77	2.96	2.81	2.19
1988	2.82												
CORN No. 2 Yellow, Gulf													
1982	2.55	2.33	2.62	2.68	2.74	2.98	3.18	3.39	3.40	3.43	3.57	3.88	3.06
1983	3.75	3.76	3.74	3.64	3.60	3.48	3.74	3.76	3.71	3.73	3.62	3.52	3.67
1984	3.31	3.08	2.98	2.90	3.03	3.04	3.05	3.05	2.96	2.95	2.92	2.67	3.00
1985	2.59	2.50	2.69	2.75	2.72	2.63	2.56	2.57	2.68	2.63	2.12	1.85	2.52
1986	1.68	1.66	1.83	1.81	1.73	1.70	1.83	1.89	2.06	2.05	1.95	1.81	1.83
1987	1.86	2.00	2.08	2.11	2.32	2.23	2.30	2.28	2.29	3.05	3.08	3.02	2.39
1988	3.08												
CORN No. 2 Yellow, Omaha													
1982	2.23	2.12	2.35	2.37	2.42	2.62	2.82	3.09	3.10	3.11	3.18	3.39	2.73
1983	3.32	3.23	3.24	3.17	3.11	3.03	3.25	3.33	3.35	3.37	3.22	3.11	3.23
1984	2.94	2.71	2.61	2.55	2.60	2.61	2.68	2.73	2.68	2.70	2.61	2.39	2.65
1985	2.35	2.26	2.28	2.36	2.33	2.31	2.31	2.34	2.43	2.42	2.01	1.61	2.25
1986	1.41	1.40	1.55	1.54	1.44	1.39	1.47	1.57	1.76	1.77	1.59	1.47	1.53
1987	1.51	1.57	1.68	1.75	1.79	1.84	1.86	1.87	1.96	2.64	2.72	2.55	1.98
1988	2.57												
SORGHUM No. 2 Yellow, Kansas City						Dollars per cwt							
1982	4.06	3.85	4.25	4.37	4.37	4.54	5.08	5.30	5.37	5.37	5.32	5.69	4.80
1983	5.55	5.37	5.25	5.16	5.09	5.03	5.40	5.36	5.39	5.40	4.95	4.74	5.22
1984	4.46	4.25	4.28	4.32	4.48	4.33	4.58	4.76	4.74	4.74	4.50	4.06	4.46
1985	3.56	3.62	3.75	3.97	3.95	3.80	3.82	4.00	4.25	4.00	3.20	2.71	3.72
1986	2.47	2.60	2.70	2.62	2.50	2.57	2.80	2.85	3.10	3.20	2.80	2.55	2.73
1987	2.64	2.75	2.90	2.95	3.05	3.24	3.27	3.16	3.21	4.58	4.79	4.28	3.40
1988	4.27												
SORGHUM No. 2 Yellow, Texas High Plains													
1982	4.39	4.08	4.38	4.65	4.82	5.19	5.52	5.94	5.76	5.81	5.86	5.85	5.19
1983	5.77	5.56	5.49	5.43	5.35	5.14	5.33	5.68	5.67	5.77	5.72	5.46	5.53
1984	5.22	4.95	4.86	4.90	4.84	4.86	4.98	5.14	5.22	5.25	5.24	--	5.04
1985	4.19	4.38	4.30	4.49	4.47	4.36	4.33	4.48	4.77	4.84	3.93	3.36	4.32
1986	3.35	3.24	2.97	3.06	2.94	2.89	3.06	3.32	3.56	3.60	3.58	3.30	3.24
1987	3.19	3.27	3.27	3.39	3.40	3.53	3.56	3.54	3.55	4.84	5.25	4.96	3.81
1988	4.98												

Table 10.--Cash prices at principal markets, 1982-1987--Continued

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
						Dollars per bushel							
OATS No. 2 Heavy, Minneapolis													
1982	2.12	1.87	1.53	1.51	1.51	1.67	1.67	1.67	1.63	1.63	1.73	1.71	1.69
1983	1.67	1.60	1.79	1.94	2.00	1.97	1.94	1.98	1.82	1.88	1.89	1.96	1.87
1984	1.92	1.84	1.77	1.79	1.84	1.92	1.87	1.81	1.82	1.79	1.73	1.65	1.81
1985	1.59	1.44	1.23	1.24	1.19	1.32	1.39	1.37	1.30	1.27	1.16	1.22	1.31
1986	1.18	1.05	1.12	1.29	1.39	1.72	1.66	1.64	1.56	1.46	1.59	1.83	1.46
1987	1.64	1.61	1.77	1.85	1.97	2.05	2.02	2.10	2.06	1.93	1.94	2.12	1.92
1988	3.26	3.25	3.09	3.07									
BARLEY No. 2 or Better Feed, Minneapolis 1/													
1982	2.12	1.85	1.72	1.69	1.54	1.58	1.59	1.63	1.72	1.73	2.01	1.95	1.76
1983	1.96	1.95	2.42	2.61	2.60	2.53	2.39	2.55	2.56	2.65	2.74	2.77	2.48
1984	2.59	2.18	2.13	2.05	2.10	2.06	1.88	1.98	1.99	1.97	2.05	2.05	2.09
1985	1.90	1.66	1.46	1.40	1.41	1.49	1.60	1.57	---	---	---	1.31	1.53
1986	1.23	1.16	1.13	1.27	1.50	1.63	1.23	---	2/	.64	1.76	1.86	1.44
1987	1.73	1.59	1.60	1.76	1.78	1.82	1.74	1.72	1.77	1.88	1.94	1.98	1.78
1988	2.41	2.31	2.08	2.24									
BARLEY No. 3 or Better Malting, 65% or Better Plump, Minneapolis													
1982	2.93	2.63	2.48	2.37	2.42	2.45	2.37	2.38	2.42	2.45	2.68	2.76	2.53
1983	2.60	2.54	2.76	2.90	2.96	2.95	2.77	2.85	2.76	2.91	3.04	3.06	2.84
1984	3.04	2.86	2.48	2.44	2.43	2.43	2.36	2.46	2.47	2.51	2.52	2.55	2.55
1985	2.46	2.25	2.03	2.15	2.10	2.27	2.29	2.28	2.20	2.34	2.40	2.07	2.24
1986	1.84	1.75	1.61	1.76	1.93	2.02	1.88	1.81	1.92	2.01	2.05	2.12	1.89
1987	2.07	1.93	1.73	1.98	2.08	2.05	2.01	2.02	2.15	2.08	2.11	2.24	2.04
1988	3.61	3.87	4.25	4.40									

--- = No Quotes. 1/ Prior to June 1977 reported as barley, no. 3 or better. 2/ Reporting point changed from Minneapolis #2 feed to Duluth #2 feed beginning March 1987.

Source: Grain and Feed Market News, AMS, USDA.

Table 11.--Feed-price ratios for livestock, poultry, and milk, by months, 1982-1987

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
HOG/CORN, U.S. basis 1/													
1982	28.5	28.2	24.6	23.7	23.4	21.9	18.6	15.9	15.1	14.4	13.9	13.9	20.2
1983	13.3	12.8	11.8	14.0	15.4	14.6	14.3	14.3	14.1	14.6	15.8	16.2	14.3
1984	16.0	16.5	18.4	19.0	18.2	18.4	16.3	15.3	15.4	16.9	17.6	17.4	17.1
1985	17.3	20.4	19.5	19.8	19.0	18.4	17.6	17.3	19.2	22.7	29.5	35.9	21.4
1986	40.2	37.9	35.9	33.7	32.1	33.9	32.2	33.4	32.8	35.0	37.3	39.9	35.3
1987	36.4	31.3	25.1	23.4	24.1	25.0	22.7	22.6	23.7	19.5	16.2	16.9	23.9
1988 2/	15.7	14.5 2/											
BEEF-STEER/CORN, Omaha 3/													
1982	27.5	27.7	25.1	25.2	24.5	23.4	22.7	21.9	21.8	21.2	19.6	18.1	23.2
1983	17.8	18.4	18.3	19.8	21.6	22.1	21.1	20.4	19.7	19.1	20.4	20.7	20.0
1984	21.3	22.4	24.6	25.6	24.8	24.1	22.2	21.5	21.5	21.0	20.4	21.7	22.6
1985	21.8	25.7	27.8	26.7	25.6	24.4	24.0	22.9	23.0	22.3	28.9	36.7	25.8
1986	42.1	42.7	39.7	38.8	40.8	43.9	41.9	42.2	40.2	38.9	41.4	43.9	41.4
1987	42.1	41.4	38.4	36.7	36.4	37.4	38.2	39.4	38.6	29.5	24.4	26.1	35.7
1988 2/	26.4	26.4											
MILK/FEED, U.S. basis 4/													
1982	1.57	1.61	1.62	1.60	1.59	1.56	1.55	1.49	1.45	1.43	1.45	1.41	1.53
1983	1.36	1.39	1.36	1.34	1.33	1.33	1.34	1.32	1.32	1.32	1.35	1.40	1.35
1984	1.48	1.56	1.62	1.59	1.57	1.57	1.55	1.51	1.47	1.45	1.44	1.47	1.52
1985	1.51	1.56	1.55	1.53	1.48	1.50	1.48	1.48	1.46	1.45	1.51	1.55	1.51
1986	1.61	1.75	1.77	1.77	1.74	1.69	1.63	1.62	1.58	1.57	1.56	1.58	1.65
1987	1.65	1.65	1.65	1.63	1.52	1.48	1.43	1.40	1.37	1.36	1.15	1.19	1.46
1988 2/	1.25	1.30											
EGG/FEED, U.S. basis 5/													
1982	6.0	6.3	6.3	6.0	5.7	5.8	6.1	5.8	6.0	5.8	5.7	6.1	6.0
1983	6.0	6.2	6.9	7.7	8.8	8.5	7.4	8.5	6.5	5.8	5.8	5.8	7.0
1984	5.9	5.7	6.5	6.3	5.5	5.6	6.3	5.7	5.5	5.9	5.9	6.5	5.9
1985	7.1	7.3	7.5	7.4	7.2	6.9	7.6	6.4	6.4	5.7	6.9	7.3	7.0
1986	7.3	7.0	8.0	7.8	7.3	7.1	6.6	6.6	5.9	6.0	5.7	5.6	6.7
1987	6.7	6.0	6.4	5.8	5.6	5.3	5.8	5.2	4.9	5.2	4.9	4.9	5.6
1988 2/	5.4	5.3											
BROILER/FEED, U.S. basis 6/													
1982	2.6	2.5	2.5	2.5	2.6	2.7	2.4	2.3	2.4	2.6	2.8	2.8	2.6
1983	2.7	2.5	2.8	2.9	3.1	3.1	3.1	2.7	2.7	2.7	3.0	2.7	2.8
1984	2.8	2.6	2.8	2.7	2.9	2.9	2.8	2.8	3.1	3.2	3.1	3.1	2.9
1985	3.2	3.1	3.5	3.2	3.2	3.1	3.1	3.1	3.4	3.7	4.5	4.6	3.5
1986	3.8	4.4	3.9	3.4	3.6	3.4	3.3	3.2	3.3	3.0	2.9	3.3	3.5
1987	2.9	2.6	2.7	2.5	2.8	2.6	2.8	3.1	3.7	4.1	3.4	3.4	3.1
1988 2/	3.2	2.9											
TURKEY/FEED, U.S. basis 7/													
1982	3.8	3.9	3.9	3.0	2.9	2.9	2.9	2.7	2.9	3.0	2.8	2.8	3.1
1983	3.0	3.0	3.1	3.5	3.6	3.2	3.3	3.3	3.3	3.3	3.6	3.8	3.3
1984	3.9	4.4	5.0	5.5	4.7	3.8	3.7	3.7	3.7	3.9	4.2	4.5	4.2
1985	5.0	5.5	5.5	5.5	3.4	3.4	3.5	3.5	3.8	4.3	4.5	4.6	4.4
1986	4.7	4.9	4.8	4.0	3.3	3.4	3.6	3.5	3.3	3.4	3.1	3.0	3.7
1987	2.9	2.8	3.1	3.6	2.8	2.6	2.5	2.7	2.8	3.0	2.9	3.1	3.7
1988 2/	3.4	3.6											

1/ Bushels of corn equal in value to 100 pounds of hog, live weight. 2/ Preliminary. 3/ Based on price of Choice beef-steers, 900-1,100 pounds. 4/ Pounds of 16-percent mixed dairy feed equal in value to 1 pound whole milk. 5/ Pounds of laying feed equal in value to 1 dozen eggs. 6/ Pounds of broiler grower feed equal in value to 1 pound broiler, live weight. 7/ Pounds of turkey grower feed equal in value to 1 pound of turkey, live weight.

Source: Agricultural Prices, Agricultural Statistics Board, USDA.

Table 12.--Price trends, selected feeds, and corn products

Item	Unit	Sept.-Aug. 1986/87 1/	1988									
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
WHOLESALE, MOSTLY BULK 2/												
Soybean meal, 44% solvent, Decatur	$/ton	162	194	183	192	200	224	288	256	255	265	260
Soybean meal, high protein, Decatur	"	176	212	200	208	218	239	305	275	274	284	280
Cottonseed meal, 41% solvent, Memphis	"	150	188	160	141	143	148	230	224	181	205	213
Linseed meal, 34% solvent, Minneapolis	"	112	146	126	121	130	134	218	194	216	196	191
Meat and bone meal, Kansas City	"	196	239	229	237	244	256	357	270	264	279	281
Fishmeal, 65% protein, East Coast	"	276	449	421	--	426	456	554	571	528	530	523
Corn Gluten feed, Illinois pts.	"	98	118	121	119	118	117	130	135	120	119	119
Corn Gluten meal, 60% protein, Illinois pts.	"	231	309	284	287	276	279	356	380	310	309	314
Brewers' dried grains, Milwaukee	"	80	119	101	86	89	94	114	144	137	139	136
Distillers' dried grain, Lawrenceburg, Ky.	"	107	139	140	136	129	127	132	178	173	163	159
Feather meal, Arkansas Pts.	"	159	265	230	225	219	224	325	279	252	278	281
Wheat bran, Kansas City	"	45	91	70	75	59	49	91	87	77	96	98
Wheat middlings, Kansas City	"	45	91	70	75	59	49	91	92	79	96	98
Rice bran, f.o.b. mills, Arkansas	"	31	67	56	56	64	45	60	95	66	62	70
Hominy feed, Illinois pts.	"	64	80	78	79	80	82	93	104	101	101	98
Alfalfa meal, dehy., Kansas City	"	92	105	107	106	105	103	113	126	128	130	134
Cane molasses, New Orleans	"	59	60	62	61	57	56	63	73	73	70	72
Molasses beet pulp, Los Angeles	"	94	100	--	--	--	100	103	115	123	128	129
Animal fat, Kansas City	//lb.	10.0	11.4	12.5	12.6	12.4	12.3	13.8	1.3	12.6	12.0	12.0
Urea, 42% N., Fort Worth	$/ton	225	225	225	225	225	225	225	225	225	225	225
Corn, No. 2 white, Kansas City	$/bu.	2.17	2.25	2.28	2.30	2.30	2.30	2.81	3.59	3.93	3.93	3.93
PRICES PAID, U.S. BASIS 3/ 4/												
Soybean meal, 44%	$/cwt	11.70	13.90	--	--	3.70	--	--	18. J	--	--	17.00
Cottonseed meal, 41%	"	12.67	14.00	--	--	13.70	--	--	1/ J0	--	--	15.50
Wheat bran	"	8.85	9.16	--	--	9.54	--	--	.20	--	--	10.60
Wheat middlings	"	7.58	8.36	--	--	8.42	--	--	9.20	--	--	9.60
Broiler grower feed	$/ton	182	195	--	--	181	--	--	248	--	--	255
Laying feed	"	169	176	--	--	176	--	--	237	--	--	222
Turkey grower feed	"	213	226	--	--	214	--	--	270	--	--	266
Chick starter	"	189	197	--	--	189	--	-	266	--	--	258
Dairy feed, 16%	"	153	166	--	--	166	--	--	199	--	--	197
Beef cattle concentrate, 32-36% protein 5/	$/cwt.	217	239	--	--	232	--	--	274	--	--	266
Hog concentrate, 38-42% protein 5/	"	271	312	--	--	308	--	--	390	--	--	371
Stock salt 5/	"	3.28	3.27	--	--	3.28	--	--	3.31	--	--	3.93
CORN PRODUCTS, WHOLESALE 6/												
Corn meal, New York Yellow	$/cwt.	11.35	11.35	11.45	11.48	11.51	11.52	13.12	13.97	13.44	13.28	13.34
Grits (brewers'), Chicago	"	8.37	8.34	8.44	8.43	8.42	8.43	10.03	10.96	10.33	10.12	10.19
Syrup, Midwest/West	c/lb.	8.16	7.91	7.91	7.91	7.91	7.91	7.91	10.56	10.87	10.87	10.87
Sugar (dextrose), Midwest	"	21.35	22.50	22.50	22.50	22.50	22.50	22.50	23.50	24.50	24.50	24.50
High-fructose (dried weight in tank cars), Midwest	"	12.22	7.85	7.85	8.44	11.22	11.36	12.14	15.34	15.34	14.54	12.14
Corn starch, f.o.b. Midwest 7/	$/cwt.	9.70	10.75	10.75	11.08	11.23	11.48	12.18	9.87	9.87	10.02	10.05

1/ Preliminary. 2/ Grain and Feed Market News, AMS, USDA, except urea which is from Feedstuffs, Miller Publishing Co., Minneapolis, Minnesota. 3/ Agricultural Prices, Agricultural Statistics Board, USDA. 4/ Prices paid data are available on a quarterly basis only. 5/ Price previously published in cwt. 6/ Milling and Baking News, Kansas City, Missouri, except starch which is from industry sources. 7/ Prior to July 1988, prices quoted were list prices. As of July 1988, reported price changed to net price after discount. Discounts taken from past list prices ranged between $3-5.

Table 13.--Corn, sorghum, barley, and oats exports, 1986/87 to date

Year and month	CORN			SORGHUM	Year and month	BARLEY		OATS	
	Grain only	Total process	Grand total	Grain only		Grain only	Total	Grain only	Total
	Bushels					Bushels			
1986/87					1986/87				
Sept	80,082,655	1,181,307	81,263,962	14,227,263	June	2,000	276,815	79,108	128,492
Oct	124,025,138	818,619	124,843,757	18,547,828	July	1,164,620	1,597,139	81,504	217,421
Nov	114,104,314	848,497	114,952,811	14,680,456	Aug	12,319,164	12,514,711	73,364	335,437
1st Qtr	318,212,107	2,848,423	321,060,530	47,455,547	Sept	12,772,707	12,912,177	121,288	327,625
Dec	109,759,488	925,574	110,685,062	19,954,747	1st Qtr	26,258,491	27,300,842	355,264	1,008,975
Jan	104,283,400	990,714	105,274,114	15,484,239	Oct	16,480,986	16,559,353	167,403	411,976
Feb	98,787,906	657,881	99,445,787	20,749,712	Nov	14,292,746	14,363,851	32,293	167,870
2nd Qtr	312,830,794	2,574,169	315,404,963	56,188,698	Dec	14,532,134	14,661,828	17,314	315,049
Mar	143,717,211	1,658,289	145,375,500	24,415,530	2nd Qtr	45,305,866	45,585,032	217,010	894,895
Apr	183,288,269	992,304	184,280,573	12,956,519	Jan	1,205,709	1,262,335	30,960	75,145
May	169,091,351	1,485,054	170,576,405	13,788,332	Feb	16,084,544	16,522,282	30,776	178,452
3rd Qtr	496,096,831	4,135,647	500,232,478	51,160,381	Mar	17,639,725	18,150,611	115,234	277,846
June	120,026,244	791,997	120,818,241	12,940,287	3rd Qtr	34,929,978	35,935,228	176,970	531,443
July	133,984,531	916,175	134,900,706	22,883,734	Apr	16,599,968	17,153,570	105,251	191,418
Aug	111,320,100	688,763	112,008,863	7,698,710	May	10,522,937	10,726,481	67,436	168,607
4th Qtr	365,330,875	2,396,935	367,727,810	43,522,731	4th Qtr	27,122,905	27,880,051	172,687	360,025
TOTAL	1,492,470,607	11,955,174	1,504,425,781	198,327,357	TOTAL	133,617,240	136,701,153	921,931	2,795,338
1987/88					1987/88				
Sept	135,403,937	727,001	136,130,948	17,832,854	June	517,681	754,738	104,217	187,886
Oct	137,693,604	1,091,494	138,785,098	16,734,001	July	7,421,463	7,675,576	50,113	92,430
Nov	122,468,369	671,935	123,086,304	10,296,951	Aug	8,893,825	9,257,652	18,135	153,171
1st Qtr	395,565,910	2,436,440	398,002,350	44,863,811	1st Qtr	16,832,906	17,687,969	172,465	433,487
Dec	148,189,862	1,096,722	149,286,584	21,462,657	Sept	10,014,514	10,217,330	24,184	62,343
Jan	133,442,601	859,133	134,301,734	19,428,923	Oct	16,474,137	17,099,495	62,220	144,789
Feb	123,706,547	981,138	124,687,685	22,498,453	Nov	17,914,754	18,114,982	38,617	99,130
2nd Qtr	405,339,010	2,936,993	408,276,003	63,390,033	2nd Qtr	44,403,405	45,431,805	125,021	306,262
Mar	164,120,347	1,169,869	165,290,216	24,662,618	Dec	15,583,102	16,123,445	5,680	36,703
Apr	166,544,265	757,197	167,301,461	30,340,887	Jan	9,595,582	9,833,000	96,376	147,370
May	180,228,794	1,011,878	181,240,672	22,103,010	Feb	6,764,525	7,239,765	29,937	148,578
3rd Qtr	510,893,406	2,938,944	513,832,349	77,106,515	3rd Qtr	31,943,209	33,196,409	131,993	332,651
June	132,984,257	849,872	132,834,129	13,740,797	Mar	15,349,596	15,756,273	24,173	49,618
July	125,143,728	1,337,472	126,481,200	20,243,604	Apr	8,796,666	9,029,851	12,420	114,674
Aug	153,230,968	881,491	154,112,459	11,996,893	May	4,470,071	4,979,881	22,950	215,233
4th Qtr	411,358,953	3,068,835	414,427,788	45,981,294	4th Qtr	28,616,333	29,766,004	59,543	379,525
TOTAL	1,723,157,278	11,381,214	1,734,538,492	231,341,652	TOTAL	121,795,853	126,082,187	489,022	1,451,925
1988/89					1988/89				
Sept	154,515,167	769,737	155,284,904	27,007,863	June	12,108,210	12,375,146	102,245	296,052
					July	11,513,586	11,749,890	38,739	100,218
					Aug	2,214,904	2,483,769	24,394	175,381
					1st Qtr	25,836,700	26,608,805	165,378	571,651
					Sept	8,758,198	8,828,256	21,017	106,755

Total corn exports include grain only (white, yellow, seed, relief), dry process (cornmeal for relief, as grain, grits), and wet process (corn starch, sugar dextrose, glucose, high fructose). Sorghum includes seed and unmilled. Barley includes grain only (grain for malting purposes, other) and barley malt. Oats include grain and oatmeal (bulk and packaged).

Source: Bureau of the Census, U.S. Department of Commerce.

Table 14.--Corn, sorghum, barley, and oats imports, 1986/87 to date

Year and month	CORN		SORGHUM	Year and month	BARLEY		OATS	
	Grain only	Total	Total		Grain only	Total	Grain only	Total
	Bushels				Bushels			
1986/87				1986/87				
Sept	311,213	332,783	6,329	June	1,296,495	1,501,548	5,325,371	5,345,316
Oct	66,792	107,949	0	July	15,140	223,046	1,841,943	1,868,602
Nov	333,201	353,750	33	Aug	19,469	210,558	1,537,423	1,559,704
				Sept	75,927	307,474	846,095	879,869
1st Qtr	711,206	794,482	6,362	1st Qtr	1,407,031	2,242,626	9,550,832	9,653,491
Dec	66,353	131,009	0	Oct	31,578	207,980	1,262,426	1,292,827
Jan REV.	85,979	134,935	0	Nov	926,059	1,193,914	2,695,161	3,342,153
Feb	14,207	52,622	86	Dec	173,536	310,750	1,241,736	1,261,139
2nd Qtr	166,539	318,566	86	2nd Qtr	1,131,173	1,712,644	5,199,323	5,896,119
Mar	29,812	63,602	0	Jan	392,962	681,307	3,981,067	4,020,146
Apr	400,056	428,391	0	Feb	625,953	772,737	3,994,932	4,027,553
May	19,009	30,652	0	Mar	1,808,103	1,888,079	2,277,619	2,300,061
3rd Qtr	448,877	522,645	0	3rd Qtr	2,827,018	3,342,123	10,253,618	10,347,760
June	326,401	339,131	0	Apr	508,133	591,606	3,401,071	3,434,844
July	32,223	48,591	197	May	792,379	849,842	3,951,545	3,988,454
Aug	71,486	83,860	0					
4th Qtr	430,110	471,582	197	4th Qtr	1,300,512	1,441,448	7,352,616	7,423,298
TOTAL	1,756,732	2,107,275	6,645	TOTAL	6,665,734	8,738,841	32,356,389	33,320,668
1987/88				1987/88				
				June	683,655	895,760	3,730,421	3,760,272
Sept	130,361	151,725	-0-	July	195,998	212,386	1,717,932	1,735,424
Oct	354,333	373,790	24	Aug	220,222	434,659	1,541,932	1,582,781
Nov	77,145	101,481	15					
1st Qtr	561,839	626,996	39	1st Qtr	1,099,875	1,542,813	6,990,285	7,078,437
Dec	246,126	298,521	-0-	Sept	1,061,243	1,396,495	1,712,779	1,744,204
Jan	126,012	167,032	-0-	Oct	926,329	1,222,581	1,270,484	1,372,822
Feb	332,569	388,773	19	Nov	876,498	1,209,707	5,106,952	5,148,944
2nd Qtr	704,707	854,326	19	2nd Qtr	2,864,070	3,828,784	8,090,215	8,265,970
Mar	593,592	683,203	12	Dec	1,146,248	1,384,778	2,537,116	2,566,988
Apr	662,637	739,543	50	Jan	1,846,528	2,038,574	4,086,315	4,154,507
May	113,606	140,762	0	Feb	1,318,218	1,605,421	9,167,026	9,213,156
3rd Qtr	1,369,835	1,563,509	62	3rd Qtr	4,310,994	5,028,773	15,790,457	15,934,650
June	347,181	376,601	-0-	Mar	1,163,560	1,280,709	6,426,933	6,482,646
July	257,479	275,042	-0-	Apr	986,537	1,063,805	3,701,098	3,737,802
Aug	169,701	207,314	7,229	May	876,452	961,089	4,721,106	4,756,988
4th Qtr	774,361	858,958	7,229	4th Qtr	2,296,227	3,305,603	14,849,137	14,977,436
TOTAL	3,410,742	3,903,789	7,350	TOTAL	11,201,166	13,705,973	45,720,094	46,256,493
1988/89				1988/89				
Sept	135,657	177,913	-0-	June	1,596,106	1,667,685	5,680,015	5,754,224
				July	930,207	1,008,540	2,276,583	2,361,750
				Aug	317,223	403,351	4,298,356	4,475,052
				1st Qtr	2,843,536	3,079,576	12,254,954	12,591,026
				Sept	240,729	346,130	2,059,442	2,409,485

Corn includes grain only (yellow dent corn, other), seed, and cornmeal. Sorghum is grain only. Barley includes grain only (bar for malting, other), pearl barley, milled and malting. Oats include grain (hulled or unhulled, unhull oats fit and unfit for hu consumption, and oatmeal fit for human consumption).

Source: Bureau of the Census, U.S. Department of Commerce.

Table 15.--Hay (all): Acreage, supply, disappea

Item	Unit	1983/84	1984
Acreage harvested	Mil. acres	59.7	61
Yield per acre	Tons	2.36	2
Carryover (May 1)	Mil. short tons	28.1	20
Production	"	140.8	150
Supply	"	168.9	170
Disappearance	"	148.8	143
Roughage-consuming animal units (RCAU)	Mil. units	89.3	85
Supply per RCAU	Tons	1.89	1
Disappearance per RCAU	"	1.67	1

N.A. = Not available.

Year	May	June	July	Aug.	Sept.	Oct.	Nov.
ALFALFA							
1983/84	83.80	78.30	77.40	77.40	79.10	82.40	80.10
1984/85	87.10	80.10	75.60	72.80	73.90	76.70	74.30
1985/86	85.50	74.90	72.50	68.10	70.70	70.50	67.70
1986/87	69.50	64.10	61.40	60.10	58.80	59.90	57.90
1987/88	77.70	67.40	65.70	64.60	69.30	68.00	64.60
1988/89	85.90	82.00	83.10	87.30	89.90	91.80	
OTHER HAY							
1983/84	58.90	56.10	54.30	52.90	57.80	59.50	62.10
1984/85	64.90	63.40	61.80	60.90	62.40	62.00	62.60
1985/86	58.70	54.00	57.00	58.40	58.60	58.20	55.30
1986/87	54.00	50.90	50.00	51.00	52.70	50.00	49.70
1987/88	51.00	49.60	50.00	52.20	52.40	53.00	53.60
1988/89	55.1	60.6	68.7	70.1	70.6	70.1	

1/ Prices reported for mid month marketings.

Source: Agricultural Prices, Agricultural Statistics Board, USDA.

pearance, and prices received, 1983-1988

984/85	1985/86	1986/87	1987/88	1988/89
61.4	60.4	62.4	60.7	66.8
2.45	2.46	2.49	2.46	1.95
20.1	26.9	26.7	32.4	27.3
150.6	148.6	155.5	149.1	130.2
170.7	175.5	182.2	181.5	157.5
143.8	148.8	149.8	154.2	N.A.
85.7	83.1	79.0	76.9	76.4
1.99	2.11	2.31	2.36	2.06
1.68	1.79	1.90	2.01	N.A

r.	Dec.	Jan.	Feb.	Mar.	Apr.	Average 2/
)	81.70	82.00	85.10	84.40	84.30	81.33
)	77.50	76.20	76.40	75.80	76.70	76.93
)	69.10	70.20	71.30	72.00	69.80	71.86
)	60.70	58.80	61.10	62.80	67.90	61.92
)	68.80	66.60	70.60	71.00	77.40	69.31
)	64.30	63.30	63.80	64.90	66.50	60.37
)	64.80	64.70	61.70	58.40	62.42	
)	56.00	56.10	56.00	54.80	54.90	56.50
)	49.40	48.10	50.90	48.30	48.20	50.27
)	53.30	52.50	52.30	51.80	53.40	52.09

Table 16.--Processed fee

Feed	1981	1982	1983	
	Year beg			
	- - -1			
HIGH PROTEIN				
Oilseed meal				
Soybean 4/	16,070	17,514	15,980	1
Cottonseed	1,848	1,495	1,022	
Linseed	70	94	112	
Peanut	107	67	68	
Sunflower	200	433	240	
Canola	29	53	99	
Total	18,323	19,656	17,521	1
Animal proteins				
Tankage and meat meal	2,261	2,133	2,102	
Fishmeal and solubles	480	412	453	
milk products	303	361	368	
Total	3,044	2,906	2,923	
Grain protein feeds				
Gluten feed and meal	904	757	1,281	
Brewers' dried grains	239	195	135	
Distillers' dried grai	448	682	564	
Total	1,592	1,633	1,980	
OTHER				
Wheat millfeeds	4,848	5,139	5,078	
Rice millfeeds	513	434	461	
Dried and molasses beet	934	519	536	
Alfalfa meal	899	887	898	
Fats and oils	629	659	670	
Molasses, inedible	1,694	2,322	2,070	
Miscellaneous byproduct feeds 4/	1,270	1,270	1,267	
Total	10,786	11,230	10,981	1
Grain total	33,745	35,426	33,405	3

1/ Adjusted for stocks, production, foreign trade, and nonfeed uses w
Includes use in edible soy products and shipments to U.S. territories.
screenings.

feeds, 1981-88 1/

eginning October

1984	1985	1986	1987 2/	1988 3/
-1,000 metric tons - - -				
17,672	17,318	18,495	19,410	18,144
1,595	1,379	1,026	1,429	1,501
106	105	119	120	104
111	161	95	100	150
307	313	260	390	225
145	121	206	205	250
19,936	19,397	20,201	21,654	20,374
2,523	2,540	2,395	2,471	2,400
589	464	518	481	490
387	375	397	364	360
3,498	3,379	3,310	3,316	3,250
1,876	1,055	1,165	1,321	1,320
142	135	146	120	110
807	873	805	1,046	970
2,825	2,063	2,116	2,487	2,400
5,084	5,278	5,649	5,659	5,789
456	548	503	548	580
728	701	645	662	600
808	777	589	554	540
672	765	832	888	860
2,407	1,887	1,771	1,605	1,660
1,267	1,267	1,267	1,267	1,267
11,423	11,224	11,255	11,183	11,296
37,682	36,063	36,882	38,640	37,320

s where applicable. 2/ Partially forecast. 3/ Forecast. 4/
es. 5/ Allowance for hominy feed, oat millfeeds, and

Table 17.--Feed concentrates, number of animal units, and feed per unit, 1981-88

Item	Crop year							
	1981	1982	1983	1984	1985	1986 1/	1987 1/	1988 2/
	Million metric tons							
Concentrates								
Corn	105.9	114.8	97.0	103.6	104.0	119.8	120.1	114.3
Sorghum	10.6	12.6	9.8	13.7	16.9	13.5	14.6	14.0
Oats	6.6	6.4	6.8	6.3	6.7	5.7	5.2	3.1
Barley	4.3	5.2	6.2	6.6	7.2	6.5	5.6	5.2
Wheat and rye	3.9	5.5	10.3	11.4	7.6	11.6	8.3	7.6
Oilseed meals	18.3	19.7	17.5	19.9	19.4	20.2	21.7	20.4
Animal protein feeds	3.0	2.9	2.9	3.5	3.4	3.3	3.3	3.3
Grain protein feeds	1.6	1.6	2.0	2.8	2.1	2.1	2.5	2.4
Other byproduct feeds	10.8	11.2	11.0	11.4	11.2	11.3	11.2	11.3
Total	165.0	180.0	163.5	179.3	178.5	194.0	192.5	181.6
	Million units							
Grain-consuming animal units (GCAU's)								
Dairy cattle	12.2	12.4	12.4	12.2	12.5	11.8	11.5	11.3
Cattle on feed	16.3	18.5	17.8	19.1	17.6	16.8	17.7	16.8
Other cattle	4.9	4.8	4.7	4.5	4.3	4.2	4.0	4.0
Hogs	20.3	20.5	20.4	19.8	19.3	19.3	20.7	21.1
Poultry	18.6	18.3	18.6	19.0	19.7	21.0	21.4	21.8
Other livestock	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.3
Total	73.0	75.2	74.7	75.4	74.4	74.1	76.4	76.3
	Tons per unit							
Concentrates GCAU								
Four feed grains	1.75	1.85	1.60	1.73	1.81	1.96	1.90	1.79
All concentrates	2.26	2.39	2.19	2.38	2.40	2.62	2.52	2.38

1/ Partially forecast

LIST OF TABLES

Table — Page

1. Feed grains: Marketing year supply, disappearance, area, and prices, 1983/84 - 1988/89 27
2. Foreign coarse grains: Supply and disappearance, 1980/81 - 1988/89 28
3. Corn: Marketing year supply and disappearance, area, and prices, 1983/84 - 1988/89 29
4. Sorghum: Marketing year supply and disappearance, area, and prices, 1983/84 - 1988/89 30
5. Barley: Marketing year supply and disappearance, area, and prices, 1983/84 - 1988/89 31
6. Oats: Marketing year supply and disappearance, area, and prices, 1983/84 - 1988/89 32
7. Corn: Marketing year supply and disappearance, specified periods, 1983/84 to date 33
8. Sorghum: Marketing year supply and disappearance, specified periods, 1982/83 to date 34
9. Average prices received by farmers, United States, by months, 1982-1988 35
10. Cash prices at principal markets, 1982-87 36
11. Feed-price ratios for livestock, poultry, and milk, by months, 1982-1987 37
12. Price trends, selected feeds, and corn products 38
13. Corn, sorghum, barley, and oats exports, 1986/87 to date 39
14. Corn, sorghum barley, and oats imports, 1986/87 to date 40
15. Hay: Acreage, supply, disappearance, and price received, 1983-1988 41
16. Processed feeds, 1981-1988 42
17. Feed concentrates, number of animal units, and feed per unit, 1981-1988 43

United States
Department of Agriculture
1301 New York Avenue N. W.
Washington, D. C. 20005-4788

OFFICIAL BUSINESS
Penalty for Private Use, $300

FIRST-CLASS MAIL
POSTAGE & FEES PAID
U.S. Dept. of Agriculture
Permit No. G-145

Moving? To change your address, send this sheet with label intact, showing new address, to EMS Information, Rm. 228, 1301 New York Ave., N.W. Washington, D.C. 20005-4788